MANITOBA PUBLIC UTILITIES BOARD

Re: MANITOBA PUBLIC INSURANCE CORPORATION (MPI)

2019/2020 GENERAL RATE APPLICATION

HEARING

Before Board Panel:

Robert Gabor, Q.C. - Board Chairperson

Irene Hamilton - Board Member

Carol Hainsworth - Board Member

Robert Vandewater - Board Member

HELD AT:

Public Utilities Board

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APPEARANCES

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Raymond Oakes	)CMMG
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--- Upon Commencing at 9:05 a.m.

THE CHAIRPERSON: Good morning, everyone. Ms. McCandless, do you want to take us through today.

MS. KATHLEEN MCCANDLESS: Sure, thank you. Good morning, Mr. Chair and members of the panel.

First thing this morning we have the MPI Investments/DCAT/RSR/CM Capital Maintenance Provision panel back for answering questions arising from answers to undertakings. We expect that will be relatively brief. I do have some questions. Mr. Oakes indicated he has some as well, and he's going to proceed before Mr. Williams, who also has some questions.

Once we conclude with that, panel, we will proceed into CAC's evidence of Mr. Viola and that should take us to the end of the day.

THE CHAIRPERSON: Thank you.

MR. ANTHONY GUERRA: And before we get there, MPI has a errors and omissions filing they'd like to present this morning, which is Exhibit Number 49, which will be a correction to MPI Exhibit Number 41, which was Undertaking Number 14. The correction

is to figure 2 of Undertaking Number 14, and that is now going to be reflected in Exhibit Number 49.

--- EXHIBIT NO. MPI-49: Errors and omissions filing re correction to MPI Exhibit Number 41, which was Undertaking Number 14. The correction is to figure 2 of Undertaking Number 14.

THE CHAIRPERSON: Thank you, Ms. McCandless...?

CONTINUED CROSS-EXAMINATION BY MS. KATHLEEN MCCANDLESS:

MS. KATHLEEN MCCANDLESS: Kristen, could you please pull up MPI Exhibit 45. This is the response to Undertaking 16, and this undertaking deals with the recognition of the expected investment expenses in determining the cash flow discount rate used for ratesetting purposes.

Mr. -- maybe Mr. Johnston or Mr. Bunston, from the undertaking response you indicated that expected investment expenses were not recognized

for this purpose in the GRA. Yes?

MR. GLENN BUNSTON: That's correct.

MS. KATHLEEN MCCANDLESS: And does the Corporation believes that expected investment expenses should properly be recognized in determining the cash flow discount rate for ratesetting purposes?

MR. LUKE JOHNSTON: Yes, we do. I was actually surprised, I -- I thought we did this. So we would recommend making that change in future applications.

MS. KATHLEEN MCCANDLESS: And recognition of investment expenses in this context does reduce the cash flow discount rate and increases the rate indication; is that right?

MR. LUKE JOHNSTON: That's correct.

MS. KATHLEEN MCCANDLESS: In the last paragraph of this response, the Corporation indicates that:

"Had investment expenses been recognized in determining the cash flow discount rate, the breakeven rate indication from the GRA would increase by .12 percentage points from .13 up to .25 percent. Is that right?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: Would you expect a change in the same order of magnitude if this adjustment was applied to the updated scenarios provided in the response to PreAsk Number 1?

MR. LUKE JOHNSTON: Yes, we would. Very loose rule of thumb, if -- at least right now, if the discount rate changes by X basis points, the impact on the rate indication is about double that. So this isn't quite that back seven (7) basis points converted to twelve (12) basis point increase, so roughly, that -- that proportion.

MS. KATHLEEN MCCANDLESS: Thank you. Next, could we please go to MPI Exhibit Number 46 and that's the response to Undertaking Number 17.

And this undertaking arose from the earlier cross-examination on the .1 percentage point reduction in the required rate change arising from the assumed $1 million reduction in premiums due to the extension of DSR discounts to certain vehicles not previously eligible following the enactment of the Local Vehicles For Hire Act, yes?

MR. LUKE JOHNSTON: That's correct.

MS. KATHLEEN MCCANDLESS: Now, Mr. Johnson, could you explain why it is that a reduction of premium due to this change in DSR eligibility leads

to a reduction rather than an increase in the required rate change?

MR. LUKE JOHNSTON: Yes. So if there is nothing happening in the industry right now, so, let's say there is no vehicle for hire coming into the market and we had decided to start giving discounts to taxis, in -- in that scenario, we wouldn't expect -- we might -- actually I shouldn't say we wouldn't effect any but we probably wouldn't expect much change -- change in their claims experience. So, we would just be lowering the premium and, in theory, we would have to bring it right back up to cover the claims.

In this case, however, we were expecting that the market share would -- for taxis would decline with -- with vehicle for hire entering the -- the Manitoba market. So we made a judgmental assumption that the -- their claims experience of taxis would also fall, but that was very -- very subjective. We didn't have evidence about what that would look like when we made that assumption.

MS. KATHLEEN MCCANDLESS: Thank you. From the undertaking response in the first paragraph you indicate that to date, the actual DSR related reduction in prem -- on premiums is slightly larger than anticipated by MPI averaging 20.6 percent for

taxi vehicles for hire compared to an expected 17.5 percent. Is that right?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: So this suggests that the reduction in the required rate change of .1 percentage points, as done in the GRA, is slightly understated; is that right?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: In the undertaking response you go on to state that claims costs for taxi vehicles for hire have tracked closely with the premium reductions.

What is the importance of this observation in this context?

MR. LUKE JOHNSTON: So if you -- if you don't mind just scrolling down to the table. So, all the adjustments we're talking about are -- have been made with the intent of charging fair breakeven rates to -- to this use, but obviously, that was very difficult to do under the circumstances.

So, recognizing that this table is only partial year's experience, if you look at the taxicab vehicle for hire line their current -- their reported to date loss ratio is about 72 percent. So, we're not see any evidence that the -- at least the initial

rates were way off. So if the -- if we had reduced the premium by a million and the loss ratio was 150 percent, we would know that that probably was, you know, maybe not the right decision, but at least right now it's tracking relatively close to breakeven.

MS. KATHLEEN MCCANDLESS: Thank you. Now, could we please go to MPI Exhibit 26, and that's the response to PreAsk Number 1. And to start I'm going to focus on figure 3 from part B, which is on the screen before you.

Now, the table in this figure shows the updated overall rate indications which reflect updated naive and 50/50 interest rate forecasts, including actual Government of Canada 10-year bond yields -- yields as of the end of September 2018. Yes?

MR. LUKE JOHNSTON: Yes. September 28th I believe, yes.

MS. KATHLEEN MCCANDLESS: 28th would have been the last trading day in September?

MR. LUKE JOHNSTON: That's correct.

MS. KATHLEEN MCCANDLESS: And the table in -- includes the breakeven indication -- the indication after recognizing the expected return on investment assets supporting Basic total equity and the indication reflecting inclusion of the net Capital

Maintenance Provision, yes?

MR. LUKE JOHNSTON: Yes, it does.

MS. KATHLEEN MCCANDLESS: So we see that the breakin -- the breakeven indication declines from the .1 percent proposed in the GRA using a naive forecast down to, at line 2, we see .26 percent reduction using a naive interest rate forecast or .6 percent reduction, using a 50/50 forecast. Yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And similarly, the indication included in net Capital Maintenance Provision declines from the 2.2 percent, which was proposed in the GRA using a naive forecast down to 1.8 percent using a naive forecast or 1 percent using a 50/50 forecast that's shown on line 5, yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And that assumes MPI's approach to estimating the Capital Maintenance Provision, yes?

MR. LUKE JOHNSTON: Correct.

MS. KATHLEEN MCCANDLESS: And again, the indication including a net Capital Maintenance Provision declines from the 2.2 percent proposed in the GRA using a naive forecast down to 1.54 percent

using a naive forecast or 1.2 percent using a 50/50 forecast and that's shown on line 7, yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And that assumes Saskatchewan Autofund's approach to estimating the Capital Maintenance Provision, yes?

MR. LUKE JOHNSTON: Correct.

MS. KATHLEEN MCCANDLESS: Thank you. The approach to estimating the Capital Maintenance Provision following either MPI's approach, or Saskatchewan Autofund's approach works from a forecasted MCT ratio as at the end of the current fiscal year. So, for example, as at February 28, 2019, yes?

MS. KATHLEEN MCCANDLESS: Does this mean that the estimate of the Capital Maintenance Provision, and therefore, the rate indication, including the net Capital Maintenance Provision is sensitive to the forecasted level of the MCT ratio as at February 28, 2019?

(BRIEF PAUSE)

MR. LUKE JOHNSTON: The reason I'm -- I'm hesitating so -- as everyone knows we're -- we're

using forecasted MCTs to figure out the -- the Capital Maintenance Provision. The reason for my hesitation is that we're looking at the amount needed to maintain MCT at the current level. So, while the forecast is dependent on -- sorry, the MCT scores are obviously changed based on whatever forecast we have. I would not expect the amount required to maintain whatever MCT ratio we end up at to be much different.

So, for example, if -- if -- we're forecasting a 70 percent MCT ratio and we needed a 2 percent capital maintenance to stay there, if it turned out that the MCT was only 60 percent, I would still expect it would be about a 2 percent Capital Maintenance Provision to stay at 60 percent.

So, sensitive yes, but the -- the magnitude of the Capital Maintenance Provision likely wouldn't change much if we -- actually even in the -- the scenarios we've run where some of the -- the forecast changed, the Capital Maintenance Provision seems to be relatively consistent.

MS. KATHLEEN MCCANDLESS: So then the sensitivity, is that a potential source of instability in the estimated net Capital Maintenance Provision going from one (1) GRA to the next?

MR. LUKE JOHNSTON: I don't believe

so. We talked a little bit a couple weeks ago about the importance of adjusting for any significant changes in our risk profile. So, if we implemented a new investment portfolio, we'd have to be cautious about -- about using it in that sense, but assuming we have a stable risk pro -- profile over whatever period we're using, I wouldn't expect a highly volatile CMP.

One (1) of things we did mention about the SGR method, although averaging over a five (5) year period has some benefits for stability, it becomes harder to make long-term assumptions like that about that, you know, nothing's going to change at MPI or five (5) years versus the -- the MPI method is jus -- just looking at the one (1) rating year and saying, are we going to stay, you know, consistent over that year?

So to answer your question, I -- I don't think either method would create significant volatility.

MS. KATHLEEN MCCANDLESS: Nevertheless, could stability be improved by estimating the net CMP at a target level of MCT ratio instead of the MCT ratio from the financial forecast?

MR. LUKE JOHNSTON: I don't -- I don't know. We might -- maybe we've done that but maybe.

So, I don't think the current method is highly volatile, but it's possible that doing it that way could -- could maybe improve volatility, but I -- I don't know the answer right now.

MS. KATHLEEN MCCANDLESS: Thank you. I'm now going to focus on Figure 7 from Part G, it's on page 8.

And the Table in this Figure shows the upper or lower Basic total equity thresholds expressed in dollars and MCT ratios for a number of different scenarios, yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And all of the scenarios reflect updated interest rate forecasts using actual Government of Canada ten-year bond yields as of the end of September, 2018?

MR. LUKE JOHNSTON: Correct.

MS. KATHLEEN MCCANDLESS: I see here that the first block of scenarios deal with the PUB lower target and in the next two (2) blocks deal with the PUB upper target, yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And the target capital analyses done for each of the PUB target scenarios in these first three (3) blocks, they

all apply to the Board's previously approved iterative me -- methodology, is that right?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: The PUB lower target scenario results are all after assumed routine management and regulatory actions including RSR rebuilding fees and rate changes, as appropriate?

MR. LUKE JOHNSTON: Correct.

MS. KATHLEEN MCCANDLESS: And the PUB upper target scenario results are -- are also after all assumed routine management and regulatory actions, but, here, including only rate changes, as appropriate. Is that right?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And are you supportive of the distinction of assuming no RSR rebuilding fees as routine management regulatory actions in the context of the PUB upper target analysis?

MR. LUKE JOHNSTON: Yes, we are.

MS. KATHLEEN MCCANDLESS: Can you explain, please, what is the modelling distinction between -- that's being made between the PUB upper dollar value target and the upp -- PUB upper percentage target analyses?

MR. LUKE JOHNSTON: Yes, I can. So, when we model the upper RSR target we're doing it -- a somewhat similar exercise as a lower, except we're determining what amount is needed at -- as an upper until we fall to the lower target.

So in one -- in one (1) approach we are using the irit -- iterative methodology to model a dollar, a lower dollar threshold and in the percentage approach, we're using the MCT target as the basis for that iterative kind of goal-seek type of adjustment that -- that -- that we're doing.

So, we -- our original approach that we've provided for the PUB target was assuming that the MCT target was the appropriate measure because that was seen as a dynamic target that moved regardless of the scenario, but we provided both here for -- for the Board to understand.

MS. KATHLEEN MCCANDLESS: Thank you. Now for the PUB target capital analyses, it appears that the 50/50 forecast results are consistently a little higher than those of the corresponding naive forecast, yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And is this because there is increased risk of interest rate

decline under the 50/50 forecast, or is it due to other considerations?

MR. LUKE JOHNSTON: Yeah. So, looking at this chart it seems like the -- you know, that the scenarios when they're -- so the first set of examples, naive, and 50/50, the -- the targets and the MCT scores all seem about the -- the same, like it's almost no impact.

One (1) of the reasons for that is the -- the new bank forecasts actually don't increase nearly as much as they did in previous years. So there -- three (3), four (4) years ago we were coming here and talking about the bank's assuming two hundred (200), three hundred (300) basis point increases in interest rates. I believe now we're talking more about forty (40) fifty (50) basis point increases in interest rates.

So, what you said is true. If we assume aggressive rising interest rate forecast, there's obviously more risk that it could fall especially when we're at levels that are considered some of the lowest of all time. We would -- we wouldn't have assumed that interest rates could fall a hundred basis points from today's levels if they're already at the lowest levels ever.

So, I believe that's the reason, and as we get to higher interest rates that risk will likely increase.

MS. KATHLEEN MCCANDLESS: Thank you. Now, from the PUB -- or looking at the PUB target capital analyses, it appears that there's not much significance in -- or not much of a difference whether the Capital Maintenance Provision is included or excluded, yes?

MR. LUKE JOHNSTON: That's true, yes.

MS. KATHLEEN MCCANDLESS: It also appears that the PUB percentage target results are a little higher than the corresponding PUB dollar value target results, yes?

MR. LUKE JOHNSTON: Yes.

MS. KATHLEEN MCCANDLESS: Can you explain why that's the case?

(BRIEF PAUSE)

MR. LUKE JOHNSTON: Sorry. Can you re -- repeat that, so that the -- sorry, the PUB percentage target is a little -- if you could just repeat that please? Sorry, the whole string?

MS. KATHLEEN MCCANDLESS: Sure. When

we -- first of all when we looked at total equity the PUB upper dollar value targets appear to be slightly -- - or -- or lower than the percentage value targets, yes? And perhaps you could just explain why that -- that's the case?

(BRIEF PAUSE)

MR. LUKE JOHNSTON: I may have to come back to you on that one. I'm trying to think of my -- why that is. Maybe I can answer later on this morning, yeah.

MS. KATHLEEN MCCANDLESS: With respect to the -- the inclusion of the Capital Maintenance Provision, again, there doesn't appear to be a significant difference whether or not it's included.

Are you able to explain why that would be the case?

MR. LUKE JOHNSTON: Yeah, that -- so that -- the -- the fact that it doesn't change with or without the CMP was a little bit of a surprise to us, but it appears the iterative methodology that we're using, by its -- by its nature of, essentially, goal seeking to discern target capital level, that -- that appears to be neutralized, or not -- not -- doesn't

affect the outcome, which is good, because that's the same logic that -- that MPI is using, that we don't want Capital Maintenance Provisions, or rebuilding fees, or things like that a the particular year's GRA to dramatically change the target. So the stability being produced by the method is a -- is definitely seen as a good thing from MPI.

MS. KATHLEEN MCCANDLESS: Thank you. Now, the Corporation's also provided MPI lower and upper target levels following the same Basic methodology from the GRA, but with updated naive and 50/50 interest rate forecasts, yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And from the updated MPI lower target using the naive forecast, the total equity target has risen to $146 million from the 143 million in the GRA, and the corresponding MCT ratio has risen from -- or to 35 percent from 34 percent in the GRA, yes?

MR. LUKE JOHNSTON: Correct.

MS. KATHLEEN MCCANDLESS: And from the updated MPI upper target using the naive forecast, the total equity target has risen to $315 million from the $305 million in the GRA, yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: And the corresponding MCT ratio target has risen to 88 percent from the 85 percent in the GRA, yes?

MR. LUKE JOHNSTON: That's correct.

MS. KATHLEEN MCCANDLESS: Now, in response to these updates, does the Corporation intend to change its proposal to the PUB with respect to the Basic target capital range?

MR. LUKE JOHNSTON: One (1) -- one (1) of the reasons that we propose MCT percentage based targets is specifically for -- for this reason. I know you've noted that they've changed slightly in our answer, but to the extent that the -- the MCT ratio dynamically changes to reflect the current state of the Corporation's finances, we would stand -- stand by the percentages proposed in the application. Again, that's one (1) of the reasons why we propose using the MCT percentage rather than dollar amounts.

MS. KATHLEEN MCCANDLESS: Thank you. Now, it appears that the MPI lower target results under the 50/50 forecast are lower than under the naive forecast, contrary to all of -- all the other scenario results, including the MPI upper target results. Why is that the case?

(BRIEF PAUSE)

MR. LUKE JOHNSTON: Just to make sure I understand the question, MPI lower target, why does the 50/50 scenario have a lower total equity target than the naive?

MS. KATHLEEN MCCANDLESS: Yes.

MR. LUKE JOHNSTON: I'd have to look into that. Intuitively, that doesn't make sense to me, so I'll -- I'll investigate that.

MS. KATHLEEN MCCANDLESS: So I believe there are couple of takeaways, then, from my questions. Perhaps they could be provided later this morning.

MR. LUKE JOHNSTON: Yes, we're looking at it right now. Yeah.

MS. KATHLEEN MCCANDLESS: Thank you. Kristen, if we could please go to MPI Exhibit 31. And in this undertaking response, the Corporation provided the Government of Canada ten-year bond rate at the end of September, yes?

MR. LUKE JOHNSTON: Yes.

MS. KATHLEEN MCCANDLESS: And we see from the response that the rate of two point four-three (2.43) would be -- that would be as of the last

trading day in the month, so Friday, September 28th, is --

MR. LUKE JOHNSTON: Correct.

MS. KATHLEEN MCCANDLESS: -- is that. And the nine -- there's a nineteen (19) basis point increase from February 28, 2018, to September 30, 2018, yes?

MR. LUKE JOHNSTON: Correct. Correct.

MS. KATHLEEN MCCANDLESS: And the nineteen (19) basis point increase resulted in the claims discount rate changing from 3.21 percent to 3.4 percent, yes?

MR. LUKE JOHNSTON: That's right.

MS. KATHLEEN MCCANDLESS: Now I appreciate that the -- your answer is probably only directional, not detailed in this regard.

But what would the implications of this change be on claims liabilities?

MR. LUKE JOHNSTON: So -- implications. So what happens with our Asset Liability Management Program, I guess there's today, and then when we move to the new ALM. Once we have the liabilities on the books, they would be matched to fixed income assets, and the intent there would be -- from that point going forward, there would be no

impact from interest rate changes on the net -- on the net income of the Corporation. So wherever interest rates move, the two (2) are supposed to offset and -- and have the -- not creating volatility for us.

Looked at in isolation, a ten (10) basis point increase in the discount rate for claims liabilities would equate to a 15 to $20 million favourable adjustment to liabilities. As mentioned, we would expect the -- the opposite effect on the fixed income portfolio to offset that favourable change.

MS. KATHLEEN MCCANDLESS: Thank you. Kristen, could we please go to MPI Exhibit 37, which is the response to Undertaking Number 10.

(BRIEF PAUSE)

MS. KATHLEEN MCCANDLESS: And in this undertaking response. The Corporation provided the volatility assumption for the real liability benchmark, yes?

MR. GLENN BUNSTON: Yes, that's correct.

MS. KATHLEEN MCCANDLESS: And the response shows that Mercer's inflation volatility, in

its analysis, was 5 percent, yes?

MR. GLENN BUNSTON: No, that's not the inflation volatility assumption. That's the volatility of the real liability benchmark.

MS. KATHLEEN MCCANDLESS: Thank you. Just bear with me for one (1) second.

(BRIEF PAUSE)

MS. KATHLEEN MCCANDLESS: Thank you. I -- I have no further questions. Yes.

THE CHAIRPERSON: Thank you. Mr. Oakes...?

CROSS-EXAMINATION BY MR. RAYMOND OAKES:

MR. RAYMOND OAKES: Thank you, Mr. Chairman. I'd like to look first at Pre-ask 1 at page 6, and this is figure number 6, as well.

And, Mr. Johnston or other witnesses, if you could just confirm this table, figure 6, shows the effect of the updated interest rate forecast, reflecting information as of September 28th, 2018.

Is that correct?

MR. LUKE JOHNSTON: That's correct.

MR. RAYMOND OAKES: I would expect

that the Corporation hasn't done any other calculations based on last week's increases by the Bank of Canada.

There's no further update available at this time?

(BRIEF PAUSE)

MR. LUKE JOHNSTON: This response doesn't have that, but obviously, that information is available. I can't remember what -- what the specific numbers are, but MPI has said several times that, you know, we're -- we're most interested in making the most accurate forecast possible. So if the -- if it would help the Board to have more -- more current numbers, we could do that.

MR. RAYMOND OAKES: If I could ask for that as an undertaking, then.

MR. LUKE JOHNSTON: Just to be clear, I think the undertaking is just what's the latest Government of Canada ten (10) year bond rate? If -- if that's -- if that's the appropriate.

MR. RAYMOND OAKES: If there has been a change, could we also have figure 6 recalculated and provided, please.

MR. LUKE JOHNSTON: Just for my -- there's not much of a back row today, but if -- it would be helpful for MPI if -- if we could do that on a somewhat approximate basis. Obviously, if the Board wants a full, updated rate change scenario, we could talk about that.

But we talked earlier about approximately what a -- a ten (10) basis point change is for the rate indication. We could approximate that and then leave it up to the Board if they'd like anything further, that is, if that's okay with you.

MR. RAYMOND OAKES: The -- the approximation would work for my purposes.

MR. STEVE SCARFONE: So it -- I think we'd need to be clear, Mr. Chair, on exactly what the undertaking will be, in part because Pre-ask 1, as the Board will appreciate, was a -- a large undertaking comprising six hundred and thirty-one (631) pages of updates, modelling. I -- I don't -- I don't hear Mr. Oakes asking for that, but we just want to be clear what the takeaway is for our actuarial people.

THE CHAIRPERSON: Well, as I understand it, the ask is for a new figure 6, amended by the Bank of Canada rate change last week.

Is that right, Mr. Oakes?

MR. LUKE JOHNSTON: And may -- maybe we can settle this, like, today if -- if -- so we're just looking at the screen -- or the latest Government of Canada ten-year bond rate is 2.41 percent, and our Pre-ask 1 is assuming two point four-three (2.43).

So if we can accept that as being relatively immaterial, so what we're saying is we're not seeing any dramatic change in the numbers that we've provided in the pre-ask.

MR. STEVE SCARFONE: So -- and so I think what the -- last week's interest rate hike hasn't had much of an impact on the ten-year Government of Canada ten-year bond yield is what -- at -- not to this point, at least.

THE CHAIRPERSON: It's -- it's Mr. Oakes's request, not -- not the Board's. I mean, it -- I don't know if couns -- other counsel want to get involved or not.

MS. KATHLEEN MCCANDLESS: Well, procedurally, I'm -- I just wonder if we are approaching the close of MPI's case. If this produces new evidence, then there would need to be an opportunity for further questioning on it, so my suggestion would be: Is there a way to have the information provided that would not necessitate

bringing everyone back?

MR. LUKE JOHNSTON: And what --

DR. BYRON WILLIAMS: What -- what I've heard, Mr. Chair, with your permission, is that currently the number is -- is relati -- is almost exactly the same. So I might question the materiality of this.

THE CHAIRPERSON: Well, I -- I guess the question is, if we're talking the difference of two-four-one (241) versus two-four-three (243), Mr. Johnston, do you want to talk --

MR. LUKE JOHNSTON: MPI is, again, if -- we've said we're committed to using the latest rate. If that -- if that rate had increased by twenty (20) basis points or something, it'd be hard for me to say that's nonmaterial. But as of today. It's very similar to September 28th, so I -- I wouldn't suggest changing it.

THE CHAIRPERSON: Okay. We'll go ahead. There's -- Mr. Oakes?

CONTINUED BY MR. RAYMOND OAKES:

MR. RAYMOND OAKES: Thank you, Mr. Chair. And when you say not materially different, are we talking about .1 or .2, roughly, percent?

MR. LUKE JOHNSTON: Yeah, pro -- about .3, point -- .4 percent. And while that's maybe meaningful to a ratepayer, there is going to be constant movement to this, and it's hard for us to adjust every day for -- for movements like that.

MR. RAYMOND OAKES: Is the Corporation --

MS. KATHLEEN MCCANDLESS: Sorry -- sorry to interrupt. I believe that the court reporter would just like to know whether or not there is an undertaking, or whether now the information is satisfactory to Mr. Oakes.

MR. RAYMOND OAKES: I think given the comments about materiality, I won't insist on the undertaking, but I would like -- I will be asking some other questions relative to this area, certainly.

CONTINUED BY MR. RAYMOND OAKES:

MR. RAYMOND OAKES: And -- and we'll come back to that. In terms of what happens going forward to the date that a decision is reached by this Board, does the Corporation intend to do further calculations and updates between now and the time of the Board Order?

(BRIEF PAUSE)

MR. STEVE SCARFONE: Just discussing with the -- with the panel, Mr. Chair. I think the more appropriate thing would be if, in the Board's Order, they were interested in having such an update provided, the Corporation would, of course, comply with that directive.

THE CHAIRPERSON: I appreciate that. You have to understand the position we're in. We make decisions based on evidence.

MR. STEVE SCARFONE: Yes.

THE CHAIRPERSON: We have to have evidence to make the Order.

MR. STEVE SCARFONE: Yes.

THE CHAIRPERSON: Now what's being proposed is that we come up -- that we look at a number that isn't into evidence and hasn't been subject to cross-examination by the parties.

MR. STEVE SCARFONE: And -- and this was the exact situation that we dealt with last year and -- and the difficulties that the Board had with the suggestion that the compliance filing be made an updated --

THE CHAIRPERSON: Yeah, but the --

MR. STEVE SCARFONE: -- forecast.

THE CHAIRPERSON: -- but the problem is, Mr. Scarfone, the suggestion for compliance filing after a hearing is over --

MR. STEVE SCARFONE: Is a procedural --

THE CHAIRPERSON: -- puts forward a number that has not been tested in the hearing, that is not based on evidence prior to the Board -- prior to the hearing closing.

MR. STEVE SCARFONE: Yes.

THE CHAIRPERSON: It's a real, you know, and I know it -- it was suggested before, and certainly, you can put it forward and file submission, but we make decisions based on evidence before us prior to the closing of the hearing.

So I'll -- I'll just leave it at that. You know, Mr. Oakes, if you want to ask more questions you can ask more questions. It appears that we're not going to have, you know, further undertakings on this point. Please feel free to -- to ask your questions.

MR. RAYMOND OAKES: Thank you, Mr. Chairman.

CONTINUED BY MR. RAYMOND OAKES:

MR. RAYMOND OAKES: Now I'm going to

be even more of a devil's advocate this morning and ask what happens with interest rate increases and Government of Canada ten-year bond rate increases that happen, say, in the early part of next year?

Would you agree with me that the result is that MPI receives more premium revenue than their break-even rate indication would be?

MR. LUKE JOHNSTON: So similar to prior years, the -- as we've discussed here, a discounting assumption is needed to set rates, and something other than that assumption will likely happen. So the last stretch of time -- we've had some unfavourable results. They could go unfavourable or favourable, and -- but were always probably going to be wrong.

But if they go up, like you said, and we use the lower discount rate in our pricing assumption, then yes, all else equal, we would have charged more than we would have if we used the higher rate.

MR. RAYMOND OAKES: And, sir, I think you can confirm for me, that the motorcycle consumers of insurance are more affected by changes in interest rates than other consumers because of the fact that they have large case reserves. Is that correct?

MR. LUKE JOHNSTON: They'd be more affected because about 85 percent of their claims are personal injury, and about -- about half of those are -- are longer-term injury. So the effect of -- of discounting is greater for them, yes.

MR. RAYMOND OAKES: Do you have any idea of the magnitude of the difference?

(BRIEF PAUSE)

MR. LUKE JOHNSTON: Fig -- well, figure 6 is on the screen right now, so you can see under the latest interest rate assumptions that the naive forecast is two -- a .2 percent rate increase, and a 50/50 -- sorry, on the break-even rate indication, and the 50/50 breakeven rate indication for motorcycles is zero point six (0.6). So in this example, it -- it's a .8 percent difference.

If you move over to the private passenger class, you see there's a .3 percent change. So just on this example, it looks like motorcycles are about twice as sensitive, maybe a little more than -- than passenger vehicles.

MR. RAYMOND OAKES: Right. Thank you for that. I'm going to direct your attention, first,

to the naive calculations and just with respect to the motorcycle experience, showing a bright -- breakeven rate indication of .2 percent, is that correct, sir?

MR. LUKE JOHNSTON: That's right.

MR. RAYMOND OAKES: And given your testimony a few minutes ago about what the change would be as at the last week, would you expect this then to be a zero percent rate indication as of the changes last week?

MR. LUKE JOHNSTON: Sorry. What -- what changes are you referring to with interest rates?

MR. RAYMOND OAKES: The Government of Canada interest rate yields which you indicated the effect likely is somewhere around .2 percent.

MR. LUKE JOHNSTON: Oh, my apologies. So the -- the 10-year bond yield has declined by a couple of basis points, so that would -- that would increase the motorcycle indication on the naive but slightly, maybe .4 or .5 percent.

MR. RAYMOND OAKES: I'm sorry, I -- I didn't understand that.

How would it change the .2 percent breakeven rate indication?

MR. LUKE JOHNSTON: So the -- the latest government bond field that we have is slightly

lower than assumed in this PreAsk. So, the lower discount rate on the naive basis would -- would mean a higher rate indication for motorcycles has effect on the other way then would be lower.

MR. RAYMOND OAKES: I see. So it wasn't in lockstep with the interest rate increase then?

MR. LUKE JOHNSTON: No.

MR. RAYMOND OAKES: Now, when we come down to the rate indication, including net CMP for motorcyclists, it shows the sum of 2.2 percent increase. Is that correct, sir?

MR. LUKE JOHNSTON: That's correct.

MR. RAYMOND OAKES: And the Corporation wishes to have this Board adopt the naive methodology.

So, is the Corporation's application for increase for motorcycles decreased from 3.1 percent, down to this 2.2 percent for this application?

MR. LUKE JOHNSTON: These would be the indications that, yes, the Corporation would calculate based on the latest interest rates using the -- the naive interest rate forecasting model, correct.

MR. RAYMOND OAKES: So, the

Corporation is asking for 2.2 percent increase for motorcyclists this year?

MR. LUKE JOHNSTON: The -- the Corporation, yes, is committed to using the latest interest rates for improving the accuracy of pricing and these are the latest and the new indication for motorcycles is now 2 -- sorry, pardon me, 2.2 based on the MPI's CMP methodology.

MR. RAYMOND OAKES: Thank you. And when we look at the 50/50 methodology, then it shows that there is a reduction in premiums attributable to the breakeven rate indication for motorcycles, being a reduction of .6 percent. Is that correct, sir?

MR. LUKE JOHNSTON: That's right.

MR. RAYMOND OAKES: And that rate indication, including the net CMP, would rise to the Corporation seeking only 1 percent increase for motorcycles. Is that correct, sir?

MR. LUKE JOHNSTON: Correct.

MR. RAYMOND OAKES: Thank you. Moving from the area of the interest rate forecast to Undertaking Number 8, and this was a question I had asked on cross-examination, seems like a very long time ago, but it related to the reserves that MPI has and the purpose and the amount.

I see some discussion of the types of reserves, I don't see any amounts indicated there.

Would you agree with that, sir?

MR. LUKE JOHNSTON: Yes, Mr. Oakes. So, it was -- well, as shown here it was me who took this undertaking and when returning to the office I was told that listing every provision on any -- every project or outstanding debt or anything like that would be quite the exercise.

So to -- what I believe your point was in this particular discussion is that MPI holds large provisions as part of -- particularly on the claim side. So if it's helpful to put on the record in the February actuarial report, which is a EAR attachment A, maybe we could just go there brief -- briefly, just -- sorry for...

So that would be page 20 of the -- I think just scroll down. So, if you look at -- under section 2, the third line, so there is a -- you see $210 million of claims provisions and another 23.7 million related to expenses.

So approximately 234 million of actuarial provisions, which -- which are required under standards of practice, I'm hoping that that's sufficient for -- for your question, just to recognize

that -- that there are large provisions on -- on -- on unpaid claims.

This would be the vast majority of those types of provisions that we hold.

MR. RAYMOND OAKES: Thank you for that. So the 230 million, that's for claims liabilities, or what we call case reserves, is that correct?

MR. LUKE JOHNSTON: It would be really for unpaid claims liabilities, so the actuary makes a best estimate, and then per actuarial standards of practice risk margins have to be applied on those reserves, based on how risky they are seen to be.

So income replacement reserves, for example, that are -- could be for a lifetime would have a higher provision than collision claims, which are paid within two (2) to three (3) months.

MR. RAYMOND OAKES: Thank you for that. And then the second part of your answer talks about the other provisions, margins and contingencies used for such things as recut -- as accounts receivable.

In truth, there's a number of other Pfads and margins in other areas, not just Accounts Receivable, isn't that correct, sir?

MR. LUKE JOHNSTON: There are other -- so this was the difficulty in answering the question the way I accepted it, and my apologies for that.

You know, anything from a project might have some sort of contingency on it. Receivables, you know, there's different things required under accounting practices.

What I'm hoping to get with -- with the numbers we've just discussed is that those other provisions are -- are very immaterial relative to the provisions held on the claims side, which are in the hundreds of millions of dollars. But yes, there are others. Yes.

MR. RAYMOND OAKES: I wonder, Kristen, if you could bring up the reference found there, page 19, universal compulsory automobile insurance annual financial statements.

And just wondering if, at a high level, Mr. Palmer, (sic) you can put something on the record that just flushes out your answer a little better.

MR. LUKE JOHNSTON: You still remember Mr. Palmer.

MR. RAYMOND OAKES: Oh, I'm sorry, Mr. Johnston, sorry. I'm showing my twenty-six (26) years here, unfortunately.

MR. LUKE JOHNSTON: I hope I'm not starting to look like Mr. Palmer, it -- maybe that's the effect of doing this for...

Okay, so, I think this -- the -- the section you're seeing here is consistent with what I've -- what I've just said. There are other types of provisions, but the actuarial provisions are definitely the most significant and -- and the -- the key part of our answer there is that we don't -- although we have allowances and provisions required by -- by accounting or actuarial practice, these aren't amounts that we can use to stabilize rates or things. I can't release the provisions, you know, when we have a stock market crash or something like that.

So, we do recognize that we hold provisions like this, but they're not used for the purposes of -- in the way the RSR reserves are used.

MR. RAYMOND OAKES: And I wonder if, when you talk about they're not as material as the claims liability provisions, what are we talking about in terms of numbers?

MR. MARK GIESBRECHT: In terms of allowance for doubtful accounts, if we look at amounts that relate to customers, just ballpark terms, you're probably in around a million dollars.

We do hold larger allowances for our subrogation and so this would be for other insurance carriers or people outside the province of Manitoba, typically. That would be around 30 million, again that's just a -- a ballpark figure.

But in terms of specific customers, about a $1 million of allowance for doubtful accounts.

MR. RAYMOND OAKES: And similarly, how about the other items, deferred development costs.

MR. MARK GIESBRECHT: I don't have those numbers at my fingertips.

In terms of deferred development costs, I would not expect a material amount of any kind allowances set against those.

MR. RAYMOND OAKES: Are you aware, sir, of other Pfads or other margins, contingencies that aren't indicated here?

MR. MARK GIESBRECHT: I am not typically a Pfad is -- more relates to the actuarial reserving, so it would not apply typically to other balance sheet items.

MR. RAYMOND OAKES: Mr. Johnston, going back to a historical issue, and this related to an exchange at page 583 of the transcript and it looks like I neglected to get an undertaking, because you

indicated you're going to advise of the money impact of the IRFR in a few minutes, and you've come back and given me some information that I'd like to put on the record as to the amount of the IRFR that the Corporation sought in the 2017 GRA.

MR. LUKE JOHNSTON: Just one (1) moment, I -- we did ask for that, I've just got to find the number.

MR. RAYMOND OAKES: If it assists, I have what you provided by way of email.

MR. LUKE JOHNSTON: I didn't realize that, but yes, please, if -- I can confirm that if you like.

MR. RAYMOND OAKES: The response I received from the Corporation by e-mail is:

> "The IRFR is explained in the overview in the 2017 GRA, and also in the 2017 PUB Order.
>
> The Corporation's alternate proposal was for a 2.3 percent IRFR in that application."

Do you adopt that, sir?

MR. LUKE JOHNSTON: I do.

MR. RAYMOND OAKES: And so going back to my question: How much money was the Corporation

seeking from its consumers?

MR. LUKE JOHNSTON: Approximate basis, 2.3 percent would be in the $20 to $23 million range. And I'd have to look at that particular year, but as you know, for that, several rate applications the -- the actual discount rate we used or assumed didn't materialize.

So, I don't know exactly what happened in that particular case, but it's possible that -- that month those funds were needed. So we talk about the $160 million of deficiencies, the Corporation was trying to set a -- a different forecast to protect itself from those types of changes.

MR. RAYMOND OAKES: So, just to confirm then, in the 2017 GRA the Corporation was looking for a factor to add another $20-$23 million to the premium revenue, is that correct?

MR. LUKE JOHNSTON: Yeah, it was called interest rate forecasting risk factor, but really the effect of it was to, essentially, not assume as aggressive of interest rate forecast, which would increase the premium required in that GRA. But those -- the dollar numbers you quoted are -- are correct.

MR. RAYMOND OAKES: All right. So you

would agree that the 2017 GRA Corporation comes with -- up with something called IRFR, not previously used or known before that application.

Is that correct, sir?

MR. LUKE JOHNSTON: In -- in those particular -- in that naming convention, no.

But we can go back to probably the 2014 or so rate application where a Corporation has proposed a lot of different objectives -- or proposals related to interest rates, including things like the low growth forecasts, 50/50, interest rate forecasting risk -- risk factor.

These are all similar ideas where we're trying to use caution in the aggressiveness of the interest rate forecast at the time.

MR. RAYMOND OAKES: In 2017 that was the first time the Corporation asked for this type of surcharge on top of the rates?

MR. LUKE JOHNSTON: That's correct.

MR. RAYMOND OAKES: And in the 29 -- 2019 application, the Corporation has now created a new type of surcharge called the Capital Maintenance Provision. Is that correct, sir?

MR. STEVE SCARFONE: I'm just going to interject at this point. That evidence was fully

canvassed during his -- during this panel's original testimony. And canvassing the capital maintenance provision is not the subject of an undertaking that was provided by the investments panel.

THE CHAIRPERSON: That's fine, I'll allow the question.

MR. RAYMOND OAKES: Thank you.

CONTINUED BY MR. RAYMOND OAKES:

MR. RAYMOND OAKES: Is that correct, sir. Do you want me to restate the question?

MR. LUKE JOHNSTON: I believe the question was: Is the Corporation proposing a capital maintenance provision in this application? We are, yes.

MR. RAYMOND OAKES: And you've told this Board that the amount to be raised from this new surcharge called the Capital Maintenance Provision is roughly 18 to $20 million. Is that correct, sir?

MR. LUKE JOHNSTON: That's right.

MR. RAYMOND OAKES: Is that a coincidence that the 18 to $20 million new surcharge is very similar to the range of -- sought by the Corporation in 2017 of 20 to $23 million?

MR. LUKE JOHNSTON: This -- that would

be coincidental. The interest rate forecasting issue is -- is -- is a different topic.

The capital maintenance provision is a -- is a different calculation, basically calculating the amount needed to -- to maintain our capitalization rate the same.

MR. RAYMOND OAKES: But the effect, you would agree, is the same that the Corporation is seeking another roughly $20 million from its consumers?

MR. LUKE JOHNSTON: The same effect but the -- that is a coincidence, that's not -- the two (2) aren't related.

MR. RAYMOND OAKES: Mr. Chairman, those are my questions. I thank you for your indulgence.

THE CHAIRPERSON: Thank you.

Mr. Williams...?

CROSS-EXAMINATION BY DR. BYRON WILLIAMS:

DR. BYRON WILLIAMS: Just a few questions for Mr. Bunston. If we -- we can go to MPI Exhibit 39, please?

Mr. Bunston, in response to where the analysis was in terms of the use of Mercers standard

interest rate forecast, Manitoba Public Insurance directed my clients to Appendix 17, Attachment E, in terms of the work done by Mercers.

Is that right, sir?

MR. GLENN BUNSTON: Yes, that's correct.

DR. BYRON WILLIAMS: And sir, I just want to -- to take you, if I might, to Appendix 17, Attachment E, and direct your attention to the nominal liability portfolio, which is the third column over.

Do you see that, sir?

MR. GLENN BUNSTON: Yes, I do.

DR. BYRON WILLIAMS: And there you see the -- the benchmark portfolio comprised of short-term bonds, mid-term bonds and long-term bonds, sir?

MR. GLENN BUNSTON: Yes, I see that.

DR. BYRON WILLIAMS: And if we go down under the risk return metrics to the expected ten-year return for the benchmark nominal liability portfolio, it's 2.1 percent, sir?

MR. GLENN BUNSTON: Yes, that's correct.

DR. BYRON WILLIAMS: Okay. And just if we could now turn to Appendix A, investments -- sorry. Investments, Appendix 17, Attachment A, Slide

13. So Kristen, it's Slide 13, please. Go down to slide 14. Thank you.

(BRIEF PAUSE)

DR. BYRON WILLIAMS: Mr. Bunston, when I direct your attention to investments, Appendix 17, Attachment A, PDF Slide 14, Slide 13 on the right-hand side.

Again, if we go over to the nominal benchmark, the third column over, you'll see it's comprised of the same bond composition, sir?

MR. GLENN BUNSTON: Yes, it is.

DR. BYRON WILLIAMS: And if we go down to the risk return metrics and expected ten-year return, we see a 2.8 percent return, sir?

MR. GLENN BUNSTON: Yes, that's correct.

DR. BYRON WILLIAMS: And in essence, if we were to compare the two (2) slides, being Attachment E, Slide 13 versus Attachment A, Slide 13, the sole difference in terms of the nominal liability benchmark is whether the Mercers standard forecast is used or the forward yield. Is that correct, sir?

MR. GLENN BUNSTON: Yes, that's right.

DR. BYRON WILLIAMS: Thank you. No further questions, Mr. Chair.

THE CHAIRPERSON: Thank you.

Mr. Scarfone, any re-examination?

MR. STEVE SCARFONE: Just one (1) question, Mr. Chair, for Mr. Johnston. Thank you.

RE-DIRECT EXAMINATION BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: Mr. Johnston, My Friend Mr. Oakes asked you about the interest rate forecasting risk that was advanced by the Corporation in the 2017 General Rate Application.

MR. LUKE JOHNSTON: Yes.

MR. STEVE SCARFONE: Can you explain, if you can, sir, the impact of the asset liability matching study on whether the interest rate forecasting risk that was sought two (2) years ago would be impacted by that in any way?

MR. LUKE JOHNSTON: Yes. So we, as the Board is aware, we used to use a net income methodology for -- for setting the rates. So basically just set rates to -- so the net income equals zero.

We also had a ALM program that was not optimal. It was done on a corporate basis, so there

was unfavourable impacts to Basic.

So we had, as an example, a -- we had one (1) application. I believe it was the -- I can't remember if it was the 2017 or 2018, but a naive forecast was a 7 percent rate increase and a standard interest rate forecast was a 2 percent rate increase. So that's a pretty dramatic difference. So at that time we had proposed the -- the interest rate forecasting risk factor to -- as a precaution there.

So -- now under with the asset liability program being proposed and the segregated portfolios, the risk for all prior years essentially neutralized, and we're talking about much smaller differences from interest rates as -- as we've shown in PreAsk 1 with the impacts of the two (2) forecasts.

MR. STEVE SCARFONE: Thank you. That was my only question Mr. Chair.

THE CHAIRPERSON: Thank you. That concludes this panel. I believe we're proceeding with Mr. Viola next. I'm just wondering if we should -- let's take a fifteen (15) minute break now and we'll set up for that.

MR. STEVE SCARFONE: Mr. Chair, just -- sorry, I was remiss in reminding the Board that there are a couple follow-up questions that Mr.

Johnston would like to respond to -- to Ms. McCandless's questions about that table that she went through.

THE CHAIRPERSON: Certainly.

MR. STEVE SCARFONE: So perhaps we should do that after the break, as I under ---

THE CHAIRPERSON: Do you have the answers now?

MR. LUKE JOHNSTON: My back row actually fell down the stairs and broke his leg, so that's why he's not here today.

So -- that's not funny. But yes -- so we'll -- he's -- I'm messaging him at home and these are some detailed questions from the model, I'll -- I'll get answers as soon as I can and let you know.

THE CHAIRPERSON: No, that's fine. Then we'll get the answers at that point.

Mr. Williams...?

DR. BYRON WILLIAMS: Mr. Chair, I'll just indicate, as I indicated to Board counsel off -- offline, in terms of Mr. Viola's presentation, most of it's for the public record.

What we're proposing, because the public record information and the confidential is closely linked, that he do the public record

information, we stand down for a couple minutes and then he -- to allow the court reporter to change her materials, and then proceed with the -- the confidential material because it -- analytically it's closely linked.

THE CHAIRPERSON: Yes, that's fine. I just want to put to the parties, unfortunately, I have a commitment at lunch that I can't miss.

So we're going to break from 12:00 to 1:30 today, I've been called away for a meeting. But we'll -- we'll break now for fifteen (15) minutes and then proceed with Mr. Viola.

--- Upon recessing at 10:10 a.m.

--- Upon resuming at 10:31 a.m.

THE CHAIRPERSON: If we could resume. Ms. Dilay...?

MR. KATRINE DILAY: Thank you very much, Mr. Chair.

So as -- as mentioned, we will be hearing the evidence from Mr. Valter Viola and it's our understanding that Mr. Viola has already been prequalified as an expert witness in this proceeding, but if it's okay with the Board we would like to take

a few minutes to confirm the exhibits that form his evidence, as well as briefly go through his qualifications.

In terms of exhibits, we would ask that Mr. Viola's PowerPoint presentation for today be marked as Exhibit CAC-28. And that is the public version of his PowerPoint presentation. It has been distributed electronically to the distribution list.

We do note that Mr. Viola also has a portion of his presentation that contains confidential information. We would propose that those slides only be introduced as exhibits once we go into the incamera portion of the hearing today.

We will now ask Board secretary to swear or affirm Mr. Viola.

--- EXHIBIT NO. CAC-28: Mr. Viola's PowerPoint presentation.

CAC WITNESS PANEL 2

VALTER VIOLA, Affirm

EXAMINATION-IN-CHIEF BY MS. KATRINE DILAY:

MR. KATRINE DILAY: Thank you. And so I just like to go through the exhibits that form Mr.

Viola's evidence today.

Mr. Viola, do you confirm that you were responsible for preparing the report entitled MPI's Investment Portfolio, Asset Liability Analysis and Previous Recommendations --

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: Sorry, which is filed as Exhibit CAC-11 on the record of this proceeding?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And you confirm that two (2) revisions to the report were filed subsequently and are marked as Exhibits CAC-11-1 and CAC-11-2?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: You were also responsible for responding to certain Information Requests from MPI, namely, MPI-CAC-1-8, 1-9, 1-10 and 1-11 which are marked as Exhibit MPI-18?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And you were also responsible for responding to certain Information Requests from the Public Utilities Board, namely, PUB-CAC-1-3, 1-4, 1-5, 1-6, and 1-7 which are marked as Exhibit PUB-16?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And you also prepared a revised answer to PUB-CAC-1-5 which is filed as Exhibit CAC-12. Correct?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: Can you confirm that the information provided in those reports and information responses is accurate to the best of your knowledge and ability?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: Now, in terms of your qualifications, Kristen, I'd like to move to Exhibit CAC-11 which is the report by Valter Viola, Appendix 1, page 27 of the PDF.

Now, Mr. Viola, in terms of your education, you received a chartered accountant designation in 1989, correct?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: You also received your Masters of Business Administration in 1990?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And you became a chartered financial analyst in 1995?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: Now, if we go a

bit higher on page 27, in terms of your experience, Mr. Viola, you have twenty-five (25) years of experience in the institutional fund management sector?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And more specifically, you have twelve (12) years of combined executive senior management and other professional investment experience at two (2) of Canada's largest institutional investors?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And that would include the Ontario Teachers Pension Plan from 1993 to 2000?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And that is a fund that has $176 billion today?

MR. VALTER VIOLA: Yeah. Probably a little higher today but big.

MR. KATRINE DILAY: Now, if we go to page 26, towards the bottom of that page.

Your experience also includes the CPP Investment Board from 2000 to 2005?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And that's a fund

that has approximately $367 billion today?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And a bit higher on page 26, Kristen. Thank you.

More recently, you have more than a decade of consulting experience as an advisor to some of North America's largest institutional investors on various aspects of investment and risk management -- risk measurement and governance?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: And some examples of clients have included Canadian Pension funds with assets under management that are about the same as those managed by MPI?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: To confirm your specific areas of expertise, they include investment research, economics and risk -- risk management, portfolio management and quantitative asset liability modelling?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: Kristen, could we go to page 2 of this same document.

And, Mr. Viola, when you were retained as an independent expert you were advised of your duty

to provide evidence that is fair, objective, and nonpartisan, is related only to matters that are within your area of expertise and provide such additional assistance as the Public Utilities Board may reasonably require to determine an issue?

MR. VALTER VIOLA: Yes.

MR. KATRINE DILAY: Thank you, Mr. Viola. Mr. Viola will now proceed with his PowerPoint presentation.

If agreeable to the Board, we would request that any questions of clarification during his presentation could be asked either by myself or by Mr. William. Thank you.

MR. VALTER VIOLA: Good morning and I'm happy to be back. I understand that you got into some Latin discussions the other day and I was warned not to get into the -- too much of the Greek math, so, I've kept the formulas to a minimum but there are, I think, two (2) Greek letters that are -- I'm going to have to refer to.

The plan, from my perspective, is just to have -- really go through two (2) parts of this deck. There's twenty-two (22) pages. The first half really sets the stage and provides a rationale for the recommendations which are on the last slide summarized

on page 22.

And a lot of the material in the first part is really similar to or identical in some cases to the material I presented two (2) years ago. So, the foundational concepts, some of the terminology with some additional comments given the focus of this year's review -- my review this year. I thought it would be better to start with those rather than get into the recommendations right at the onset. So if I jump to slide 3 really quickly.

This is the slide that I presented two (2) years ago and going down the middle column, I broke out the issues into two (2) parts. The bottom was really my sort of diagnosis of the problem which I framed in a very general sense. I, basically, identified focus and process as two (2) common problems for all institutional investors whether it's a pension fund or another large institutional investor that manages insurance risk, such as MPI, but they're common problems and they'll always be there, focusing on both sides of the balance sheet, assets and liability as the Mercer study and the work that MPI did this past year is clear that there is a big emphasis on that. So that's the good news.

That's not the case with many funds so

it frames the issues and differentiated between the symptoms that I saw two (2) years ago, and the problems that underlie it.

So, going down the middle column, two (2) years ago we identified the fact that there were no real return bonds in the portfolio, which I found surprising given the nature of the obligations of the -- of MPI which consist primarily of the basic insurance obligations and then a pension plan that roughly represents around 20 percent, plus or minus of the financial value of the liabilities for example.

And I raise the issue that the duration management was not as effective as it could be because the nature of the assets that were backing them were nominal in nature and I'll go into the distinction between nominal and real instruments and interest rates and risks in a moment.

We noted that Canadian equities, there's natural home bias for all institutions, whether you're Canadian or not, but in this particular case, we noted that the bias -- the concentration in Canada was particularly large and that was particularly concerning from my perspective simply because Canada has a highly concentrated sector. Certain sectors like energy, et cetera and the banks.

The other one (1) was there were no stocks exposure beyond Canada and the US and so there were missed opportunities to further diversify the portfolio and get better risk-adjusted returns. So those are the observations back then.

In terms of the focus -- and, again, this is sort of a broad general statement about all institutional investors but, in particular, as it related to MPI we noted that there seemed to be a focus more on the short-term, as opposed to the long-term, and -- and particular concern about rate stability at the expense of a longer-term horizon that perhaps had a focus of the full portfolio designed to mitigate longer horizon risks and get higher returns by taking different kinds of risks in a prudent fashion.

Back then we noted that AON had done a study that the GRA was based on that study, to a large extent, and when I looked at the risk and return metrics in that paradigm from the AON study, it was clear to me that it was -- it was less reliable as a means for optimizing the portfolio, making sure risk -- return risks, trade-offs were appropriate because the metrics on the risk basis, for example, were based more on accounting metrics.

And I'm an accountant by background, but I don't practice, but I knew enough that one (1) of the first principles accountants should ask themselves is what's the purpose for which these accounting numbers are being used?

And sometimes the accounting should reflect better or differently the purposes. So there's not one set of numbers, even though the actuaries, the accountants and the risk managers all call certain things assets and liabilities, the basis for evaluation and risk management are very different.

And so the notion of sleuthing accounting numbers, having very different accounting treatments for MUSH bonds versus nominal bonds versus real estate equities, et cetera and what triggered the recognition of gains and losses, whether it was to other comprehensive income or net income, those things made differences -- they -- they resulted in different metrics and therefore different behaviours and measures and assessments of risk.

So that was of a concern of mine, but ultimately, from my perspective, I sort of identified two (2) broad categories that would help remedy the underlying problems, the first one being a framework on the right.

And the framework to my way of thinking is simply just a paradigm that an -- answers key questions like, what is your goal as distinct from an objective? Are we trying to manage assets and liabilities in a way that minimizes the surplus volatility or the excess return volatility as Mercer had indi -- described it in the recent asset liability study or is it to be benchmarks and look better than our peers?

Because those are all possible goals and objectives and the framework, if articulated well, makes it clear what are the primary goals as distinct from secondary goals, and therefore, the opposite side of that coin, what is the risk inherent in meeting these multiple objectives or goals. We can go to the next slide.

So fast forward to what happened over the past two (2) years. Mercer was engaged to do a study and I've -- I've cr -- crossed out the items that were addressed based on the eighteen (18) recommendations that were put forth two (2) years ago.

I indicated back then that -- I -- I - I'd like to think of portfolio management as a hockey game and if you think there's six (6) players on the ice, if there's one (1) goalie, two (2) defence and

three (3) forwards typically and a whole bench that backs it up.

So wh -- sometimes when I think about the 60/40 typical asset mix between risky assets and less risky assets, two (2) buckets that I'll talk about soon, that's really a hockey game.

You've got usually a goalie and a backup on the bench so there's two (2). You've got three (3) lines of defencemen, so that's six (6). There's four (4) forwards -- sorry three (3) forwards but four (4) lines. You add it all up and there's twenty-six (26) on the ice, the rest on the bench. Two (2) goalies out of twenty (20) players is about 10 percent.

And the goalie, to my way of thinking, the better goalie is one that is in the net stopping the puck and the puck that we're trying to stop is being shot at us by the opposing team who I think of as the liability.

So if our team of portfolio assets consists of six (6) players on the ice, some on the bench designed to achieve our objectives, the way the Mercer study's done and MPI's framed the question, they're really in the business of designing a portfolio of assets, players on the ice and on the

bench, on a roster, that are trying to outperform the liabilities.

And those liabilities have certain characteristics that really have nothing to do with what the assets look like, us. They are what they are and at any point in time, we could look at those liabilities and say, they're long-term in nature, they're inflation sensitive or not, they may not be perfectly re -- correlated with CPI, but they've got some inflation-like characteristics.

And so when I look at what's changed, they're still, I would say, a shaky goalie in the net. So we've got nominal bonds in the portfolio or being proposed whether that's implemented or not. We don't have real return bonds in the portfolio, so there's a -- there's a worry that inflation will turn out to be different than expected.

If inflation were not volatile it wouldn't be -- it wouldn't be much of a sig -- there wouldn't be any significance between owning real return bonds and nominal bonds, but that's not the case; even though we're in a low inflation environment we're thinking decades out and we're not very good generally, people investors, about forecasting interest rates.

And while inflation on the horizon might be reasonably stable at a certain level, say 2 percent, with a little plus or minus a little bit, when you go beyond three (3) five, (5), ten (10) years, it becomes harder and harder to predict whether the Bank of Canada and other factors will continue to be benign. So, I continue to worry about the shaky goalie.

And in terms of the accounting at the bottom, I'm less worried about that now because the Mercer study made it clear that MPI has decided that the basis for the optimization is based on market value. So we mark to market the value of the liabilities, they have a long duration and they're sensitive. And so, the matching assets of that have similar properties in accounting book value cost. Those are less important or worrisome to me, but they may still be of concern for other purposes.

But again, what's still on the -- on the -- of concern, I would suggest, is this focus on more shorter horizon as opposed to long-term and the stability of rates in the short term and if we go to the next slide, this brings us to today.

And again, the carryover on the left is the shaky goalie and the focus at the bottom as a

problem in terms of the short -- shorter horizon as opposed to longer horizon focus. The additional ones and the symptoms, again thinking hockey wise, we've got fewer strong defencemen, at least proposed. We are -- what I've heard is that we're going to have fewer real assets in the portfolio, real estate and infrastructure which gives less inflation protection where currently there is not a lot 'cause there are no real return bonds in the net playing goal and we've got a crowded net.

And so when we say -- I say that, I think of different types of fixed income bonds in the portfolio; some have credit risk, they're not just federal or they're not pr -- federal, they're provincial and corporate. For example, they've got inflation risk; they've got credit risk; they've got some illiquidity, not overly concerning, except for the fact that all of the risk that is being taken for presumably higher return is really concentrated in the basic portfolio which represents 80 percent of the total, pension being about 20, being concentrated in that area and I -- and to my way of thinking, it seems like, you know, a more balanced portfolio regardless of where you are in the risk spectrum, going across the bottom -- we'll look at a graph in a minute -- the

composition of the portfolio in the risky bucket and a less risky bucket, which I'll describe in a minute, there's some concerns about where things are concentrated or not.

And I think, again, I think we're underestimating the opponent, again the liabilities. When we look out decades, it's pretty hard to predict interest rates and the components that make up a nominal interest rate, i.e., inflation and while in -- interest -- inflation, rather, is benign in the short term reasonably, who knows what's going to happen longer horizon.

And the more important points are at the bottom and we jump to the -- the very bottom, which is this liability benchmark portfolio, which is a proxy for what the liabilities look like from a financial risk perspective.

And the key point there is that, I'll say it again, I think I said it once, that the liabilities are what they are. They either have inflation protection. They're either long time -- or they either have a long ti -- time horizon or they don't and those are the facts.

Quite separate from that, is our view on what's going to make that hurt us from a portfolio

performance point of view, net of the liabilities. So managing assets and liabilities, we only can control the assets. The liabilities are what they are and, of course, we have to look at capital market expectations about inflation, interest rates, market corrections, and equities, all -- all those things, liquidity, credit risk.

But, the decision to accept risk in the portfolio moving along that bottom axis to either the low end where there's very little risk, but we can never get rid of it completely to higher risk where we might have mo -- more equities in certain portfolios than others, or at certain times, that decision is quite separate from the reference point from which you measure risk and return. The liability benchmark portfolio, in my estimation, has a long duration and has some inflation sensitivity to it.

If we could jump to the -- sorry, there's one (1) point I missed there on the focus. The new item there in terms of a problem is, given the explicit recognition which is a -- a great one, not all funds explicitly recognize a liability benchmark portfolio, but MPI has and I commend them for that.

It's the composition of that portfolio that's of concern to me. And the way it's structured

now, defined, all nominal bonds, no real return bonds, there is a risk to longer term instability to premiums, what consumers would pay to fully fund the plan -- or appropriately fund the plan. Go to the next slide 6, please.

So, I'll go -- the next two (2) slides have some terminology. I won't go through all of them. We all know that risk is a forward-looking concept. We all are familiar with the concept of duration. The duration concept has two (2) elements or two (2) -- well, there's -- it -- it applies to both assets and liabilities, fixed income products.

And in the case of Basic pent -- Basic liabilities, for example, we've seen through the GRA that the duration of the Basic liabilities is about ten (10) and the pension is even longer at about sixteen (16), which is to say, for the Basic pension when interest rates change by 1 percent, the liability will change by ten (10) times that, roughly speaking.

So this duration is just a rough estimate of the sensitivity to interest rates as it relates to the liability. The assets again they -- they are -- they are sensitive or not and there's a policy to match the assets and liability duration within, I think, a quarter point. So a very tight

discretion -- low discretion for being different from what's deemed to be the duration of the liability.

The other important concept about duration mathematically is that it actually represents this notion of time and so, if you think of the cash flows related to the liabilities as being long -- long horizon, think of a distribution around ten (10) in the case of the Basic liability.

So the duration of the Basic liability is ten (10), which is to say, if you took all the cash flows out that you have to pay out, as best as we can figure out, and you discounted them back to today and you came up with a "X" billion dollars worth of a liability, duration represents the weighted average using the time value of money -- of the timing of those cash flows.

So if interest rates were zero, there is no discounting. Ten (10) would represent the average time -- the average maturity profile of the cash flows. The actual duration is shorter than the term to maturity because of that discounting process, but think of ten (10) as an average. So ten (10) is a long number. It's a high number. It's not one (1) year.

So the liabilities are an inherently

risky proposition to put out there. By setting up a pension plan with a sixteen (16) year duration, you make a promise that you'll pay those cash flows and you have assets to back them, same with the insurance for basic insurance, except that it's a ten (10) year, but the important thing to remember is that the -- the ten (10) is the average.

So, roughly, other things equal, unless it's -- it's not symmetric around that average, half of the portfolio or cash flows, at least, on the ten (10) year basic duration are well beyond ten (10) years or fifteen (15), twenty (20), longer years and there is a weight to that.

And so when we develop duration policies and think of matching, matching to ten (10) is the average and that's, you know -- but there's a recognition that I can at least notionally think of what the two (2) halves represent and what's my forecasting ability in the next ten (10) years versus the ten (10) years that follow that, for example.

And I certainly have more confidence about my forecast as about inflation and interest rates for tomorrow or the next year rather than those that go out twenty (20) years.

I'll move a lot faster on the

definitions, or that's an important one 'cause -- 'cause my recommendations really stem from that basic principle or understanding.

So inflation, we all know what that is. Nominal and real interest rates, the difference represents inflation expectations after the fact that's a realization and there's this thing called the Fisher equation, a famous economist who basically said, you know, roughly speaking, if inflation is 2 percent and I really want to maintain my purchasing power, my real value of what I buy at the grocery store, if inflation is 2 percent, I'd better earn all my assets at least 2 percent nominally, to at least stay flat. I can still buy that apple, bananas, my whole basket of goods out the door, if I earn enough to cover the 2 percent inflation.

If I actually want to do better by investing in more risky assets, or not even risky assets, let's just say cover inflation, I'll want a real rate of return, so that my purchasing power actually I can buy some dessert next time, not just have meat and potatoes, say.

So that's a simple difference. Again, the two (2) Greeks, I apologize, volatility and correlation, standard deviation, they're two (2)

statistical concepts. We won't go into the details, of course, but they're, you know, volatility is simply the dispersion around an average. The distinction between an average and a -- and a volatility around that average is important, especially as it relates to inflation, in this case.

And the other important one is correlation. And this is what makes investing a team sport, because what kind of a goalie you put in the net, or whether I have a goalie or pull him out of the net, really depends on what's going on in the game and who's on the ice. If I've got a really strong goalie, he'll stop inflation risk, or what other kind of risks are -- are hitting me, or potentially hitting me. It allows me to actually take more risks with forwards, and the defenceman can cheat. They can pinch at the blue line.

If I don't have a great goalie, I can't afford to take those other risks. And so the question is really about shifting assets completely. I'm -- I'm taking risk off the table, and I have to do it in a silo mentality, and assign different tasks and say, you do this; you do that.

We all have -- they're all correlated. The defencemen generally are defensive, but they do

score goals. Bobby Orr was a great scorer, right? And the goalies rarely score, right? We don't expect them to score.

So when we look at the return on low-risk assets, it's kind of unfair to say, they give us a lousy return. The question is, did they give us a lousy return to the next best alternative, and do they allow us to take more risks with our defenceman and equities that, in aggregate, allow us to outscore the liabilities of the opponent?

So those are the questions that come to mind. The equation at the bottom is very important. And in the simplistic form, you can just think of this vol -- and these are yields. This is the volatility of nominal interest rates.

So a nominal interest rate, let's call it 3 percent, consists of, let's say, a 2 percent inflation rate and a 1 percent real return. Those are the averages. What really -- what we really -- really worry about is the volatility of inflation, and that's that -- the term that says standard deviation or sigma, and there's the letter pi, for inflation. Pi stands for inflation.

If that term is zero, there's no inflation volatility, those second and third terms

drop out, which means that the volatility of real rates is the same as the volatility of nominal. And so will the returns. The returns will be identical.

So we're only talking about this equation, because inflation is not -- inflation volatility is not zero. Inflation level -- the mean can be 2 percent, 10 percent. If investors expect that it will be maintained at that level, we don't really have to worry about inflation risk, because they'll price that into the instruments that they buy for their purposes. But when inflation is -- volatility is not zero percent, we have to worry about whether the assets that we're buying are managing the risks in a way that's most efficient.

And again, from my perspective -- we'll see the data later -- it's easier to forecast the volatility of inflation over the next one (1), two (2), three (3), four (4) years, but if you look at the history and what's happened, we're certainly in a very low -- a -- a stable inflation environment. It's low and stable, which is great, but if it ever becomes higher and unstable, having nominal assets rather than real ones could result in some pain.

You can go the next slide, 7. So I've already talked about the distinction between the

nominal bond and a real bond. A real bond simply protects the principal by inflation. So if you buy a real bond for hundred dollars ($100), inflation is 2 percent, your hundred dollars ($100) actually gets indexed -- it's as if you put in a hundred and two (102), but they don't ask you for the extra two (2) to cover inflation. And so the hundred and two (102) principal amount is inflation hedged, and the coupon will apply to that higher amount.

So basically, real return bonds are the best hedge, regardless of your time horizon, because they fully index the cash flows, whether the cash flow was due in a year or thirty (30) years. And the longest real return bonds are outstanding. They've got another thirty (30) years to go.

Now the liability benchmark portfolio can be confusing, but the liability benchmark portfolio is the proxy for the liabilities. And in the past, prior to Mercer doing their asset liability study, my recommendations from two (2) years ago referred to this thing called a minimum risk portfolio. I -- I refrained from using the term 'risk-free portfolio', which you typically see in the literature, because there's nothing really risk free. The Government of Canada -- the Government of

Manitoba, they can default on a -- on a bond. So I prefer the use of minimum risk portfolio rather than risk-free. I'll talk about risky buckets and non-risky buckets later, but we'll -- I'll generally refer to the liability benchmark portfolio as a proxy for liabilities.

And as we'll see in the next slide, and maybe we could jump to it, those are the buckets I'm referring to. So up at the top right quadrant --

DR. BYRON WILLIAMS: Mr. Viola, just--

MR. VALTER VIOLA: Yeah.

DR. BYRON WILLIAMS: -- and I apologize for this.

MR. VALTER VIOLA: Of course.

DR. BYRON WILLIAMS: I know you're anxious to move on, but just to go back to slide 7 --

MR. VALTER VIOLA: Sure.

DR. BYRON WILLIAMS: -- one (1) definition --

MR. VALTER VIOLA: Yeah.

DR. BYRON WILLIAMS: -- tracking error?

MR. VALTER VIOLA: Yeah. I was going to come back to it in a minute, Byron, so when --

DR. BYRON WILLIAMS: And then -- go

ahead.

MR. VALTER VIOLA: -- go -- go -- let me -- so go to the slide, and then I'll come back to those definitions. So that I was referring to the risky bucket and non-risky bucket. These are the -- these are the concepts I wanted to introduce. And if we can think of it as an efficient frontier in, I call it surplus place -- sur -- surplus space, or assets minus liabilities.

So the bottom axis, if you look, my upper quadrant with the bucket says risk without defining the metric. The bottom axis is the one actually used in the Mercer study, and Mercer defines risk as the excess return volatility -- excess return of the asset portfolio in question could be, you know, 30 percent this, 60 percent that, and 10 percent something else in relation to this liability benchmark portfolio.

So that's kind of, in -- in investment terms, they call that the tracking error. It's the volatility of the performance difference expected, measured as standard deviation, between an actual aggregate portfolio -- total portfolio and this minimum risk portfolio, or the liability benchmark.

So it's -- it's -- so this basically

says 3.8 percent is the number -- if you look at the vertical number, this is assuming a real liability benchmark, and it basically says that two thirds (2/3s) of the time, you should expect the current assets -- in this case, the dot -- could have a performance that is different from the expectation -- in this case, growing surplus, having assets grow faster than the liabilities by -- it looks like mean is about -- eyeballing it, about one point eight (1.8), but it could vary from that two thirds (2/3s) of the time by as much is 3.8 percent.

So that's the risk, and it's because you've got a long-term promise, and you -- you haven't got assets that fully immunize that risk, because it would cost more to do so. So the fund needs to take risk, and the question is really, is that the most efficient way to do it? And we'll -- then we'll talk about the different curves.

So let's go back to the previous slide, and I'll talk about the two (2) last definitions. I mentioned tracking error against the standard deviation or the risk of two (2) things. And if you want, typically it's talked about as the tracking error against the S&P 500. So somebody who's trying to beat the S&P, they take tracking error, because

they don't buy all the five hundred (500) stocks in the S&P 500.

They buy -- only buy a hundred, and depending on how the hundred do versus the five hundred (500) that they're benchmarked against, they could underperform, but they're picking only a hundred instead of five hundred (500), because they think that those are the better hundred, and they'll do better. So the goal is to outperform that benchmark, and in the surplus context that we're managing assets and liabilities, it's the same concept, and that's the metric across the bottom.

Basis risk is really related to tracking error in the context of the two (2) liability benchmark portfolios that Mercer put forth as possible alternatives on how one would characterize the liabilities for MPI -- for both the Basic and the pension portfolio, and -- and the other portfolios, is my belief. I'll focus on just the Basic and the pension.

And so there's no basis risk if the portfolios look identical. Just -- they're -- they're mirror images of them. The Basis risk for tracking error exists to the extent that they look different. And in the case of the liability benchmark portfolios

that were put forth by Mercer, one (1) consisted a lot of nominal bonds, and the other one consisted of a lot of real return bonds, with some nominal ones as well.

And so the question is, how big is that basis risk? We'll show later Mercer's number, but it's a big number. It's about 4.6 percent, as I recall. So we can -- we can move on. I'll -- I'll move a little bit faster, but I thought those concepts were important, because I'll be referring to them again.

So those are the big picture items. This happens to be a graph of the Basic pension return and risk profile from Mercer from the two (2) questions that were posed by us and subsequently and answered by MPI and Mercer.

If we could go to the next slide, 9, please. I'll fly through these. The -- this is a slide that I put up two (2) years ago, and I've just noted a few updates. And -- and the sad and inconvenient truth, there's three (3) of them, and -- that are important to take into account. I'll only focus on the first one on the left. We don't know very much. And the last one, correlations are not perfect. The one in the middle is really about governance, which is not really what's in scope for

me.

But the truth is the truth. I mean, there's no -- there's no -- there's an alternative truth. We've heard about that terminology south of the border. We also call those myths or lies. But in -- in between is beliefs, right? We kind of believe they're truthful, but we only have empirical evidence or common economic sense that would suggest that's more true than an alternative fact.

And those are important in investments, because in the first column, we say we don't know very much. This is -- this is not the -- a world of Newton and the apple falling from the tree at 9.8 metres per second squared. This is the world of thinking about inflation expectations in the future, and we don't have a crystal ball, or at least, I haven't found one yet.

And the reality is, though, we have to make important decisions about how much risk to take, where to take it, what levels to set for rates, et cetera. So we don't know very much, but we have to inform our judgement based on some stuff.

So I've articulated beliefs that I thought were relevant two (2) years ago. I relied upon them again this year to make some

recommendations, and I borrowed them from the beliefs that we developed when I was at CPP Investment Board, which is, as Katrine said, is, you know, roughly, it's going to be about 400 billion, if it's not already there.

But I was there for (5) five years, head of research and risk, working with the gentleman, Don Raymond, who is -- who led the -- this formulation of beliefs. And I didn't really fully appreciate the importance of beliefs until you come across people with divergent views about how to define risk and strategy.

So you can't have a really coherent, cogent strategy and consensus on it unless the beliefs are shared. And so it's very important to focus on those, because otherwise, you -- you could run into trouble, and it makes for difficult management oversight. So the beliefs are important, and I articulated some.

Forget about the middle column for now, other than to note that the frameworks are important, and -- and as I understand it when I read the GRA, one (1) of the recommendations I recall was related to the framework, and having -- having one. And I think the response we heard back from MPI was, I believe, and

I'm just saying it in general terms, I -- I think one (1) of their advisors -- and I can't remember -- I do believe it was Mercer who indicated -- was Mercer -- that it is very important, time-consuming, should be done, and as I understand it, I thought it was a corporate priority to be done, so that's great to hear.

The last column, correlations are not per -- perfect. This is what makes investment management a team sport. So it's -- I believe it's not appropriate to look at any asset, whether it's real return bonds, stocks, or anything in isolation. The question isn't, you know, rate volt (sic) or real return bonds. There's a graph that I show later. They used to earn almost 5 percent real, net of inflation. Great. We had Terry Sawchuk in the net, right? Terry's from Winnipeg; anybody remembers Terry Sawchuk. Great goalie.

We don't have Terry Sawchuk today. We don't have 5 percent real interest rates. We have 1 percent, if we're lucky. So we have lousier goalies today. I shouldn't say that. We had goalies who could actually score back then. That's what -- that's the difference. They still -- they're as good today at stopping the puck as they were back then. It's

just that they used to actually score goals and have higher returns. That's the story.

But the point here is that you can never look at an asset in isolation without having -- without looking at the other assets that are in the portfolio or could be in the portfolio. And so this notion of beta or correlation is very important. It's not in marginal concepts, and we'll -- we'll talk about it in a -- in a minute, but that's very important.

So we can't look at RRBs, or nominal bonds in isolation. It's what contribution do they have, given that you've already got some other assets in the plan? So if you've already got a great goalie, you don't need another one. You might need a forward. So that's kind of the story.

If we can go to the next slide, please. I'll jump through these next slides again. This was a common barrier to excellence. Whenever I have an engagement with clients, the symptoms are always different. The -- the problems are always the same, and it's simply because of the fact that the people who manage the money aren't the owners of the money, so there's governance issues, there's measurement issues. But the punchline is -- this first one is the

focus.

And the good news is Manitoba Public Insurance explicitly acknowledges that the liabilities are important, they want to hedge them to the extent that it makes sense. That's great. A lot of people spend their life trying to beat benchmarks, and they actually have really wrong benchmarks, because some -- in some cases, they're easier to beat, and they're the wrong policy portfolio. They spend their life in active management. That's not the case here, and so that's good.

I won't go into the other issues, but they're always the same across the funds. Processes can always be improved, communication can be improved. People may think they have great ideas, but there have to be institutional capabilities to actually execute on them, and resources beyond my scope, but obviously, you need systems people, all that kind of stuff.

If we could jump to eleven (11). So briefly, again, these were -- this is a summary -- a Reader's Digest version of beliefs that were developed. There's five (5) of them here at CPP Investment, where we developed lucky thirteen (13). We had thirteen (13) of them, but these were the important ones. They weren't designed to be risk

related at all, but risk is embedded in everything we do in investments, so risk pops up everywhere, even though they were investment beliefs, not risk beliefs, per se.

So this is the brief version. I'll expand on a few of them that are relevant for this year. The first one is really saying, you know, we're in it for the long term, and sustainability is important. The second one is this notion of the minimum risk portfolio is really defining the rules of the game. It's saying: Are we trying to score goals? Are we trying to win the period? Are -- you know, are we trying to beat benchmarks?

The guy in Saskatchewan, or the fund in Saskatchewan, or are we trying to look at the liabilities as the main opponent and have few goals on us, but to score on them, have higher returns and less risk of funding deterior -- deterioration? So this notion of a liability benchmark portfolio is pretty fundamental, because it really dictates how you play the rest of the game, where you put your assets to win the game.

The additional risk, obviously, if you decide you wanted -- and again, risk tolerance is a function of a lot of things. Moving along the bottom

axis on that risk/return axis, obviously we would take more risk if we thought the return was high enough. So that's a discussion that needs to be done. We probably don't need it as a belief.

The fourth one is really important. It's this notion of a marginal concept. Again, it's a team sport. Correlations matter. So depending on who the opponent is, and the correlation between my players and their ability to track them, and shadow them, or do whatever, play the game, that's important. In correlations, unfortunately, the math gets a little hairy, and models are better at figuring out the implications of these nonzero correlations than -- than I certainly am, and then most people are.

And then the last one, really, isn't a -- isn't a belief, but we think it's still important, because a lot of funds don't appreciate the cost of constraints. So when we think about the efficient frontier being curved like this and not a straight line, it's curved because correlations aren't perfect, and it's a line because it has certain assumptions embedded in it, the capital market assumptions about the returns on equity stocks, bonds, and correlations among them, and the liabilities, and the volatilities of all these things.

Constraints serve to shift the curve up or down. So when you relax the constraint that was constraining, it shifts the curve up. For any given level of risk, you can get a higher return. If it's not binding, the curve doesn't shift.

In some of the Mercer analysis, where they go through the step process, both for the nominal liability assumption in the real one, you can see the cost of those constraints, and that first graph that I showed really shows the impact of imposing a constraint that says, I'm not going to buy real return bonds in my portfolio when my liabilities are inflation sensitive. And I quantified that number at the current level of risk, and I said that cost is .8 percent per year, using Mercer's assumptions.

So that's a -- that's a big number. And we did another number for the pension, but was it was -- it was smaller. And I think my first estimate -- I grabbed the wrong curves, where I revised the statement that we put forth initially, and I think it was twenty (20) basis points at a cost of that constraint, for example.

So if -- jump to -- qui -- slide 12. This is where I start to drill into a couple of the beliefs only to support the recommendations. And by

the time I get to the recommendations, I said, there's only eight (8). A couple of them I'll skip over quickly, so we'll probably address a lot of them as we talk about the beliefs that support them.

So the minimum risk portfolio is the liability benchmark portfolio. It's saying, what is -- how do we measure risk for this fund? And I think rightfully, Mercer and MPI concurred that the liability benchmark portfolio has a long duration. The question really is about what's the nature of that duration? Does it arise from changes and risk to interest rates changing that are real or nominal? And that's the issue.

And just to be clear, this definition of how we characterize the liabilities is not dependent on our current view about inflation, volatility, or level in the next year, five (5) years, or ten (10) years. The liabilities are what they are. They're either long, which they are, ten (10) years, in the case of Basic, sixteen (16) for pensions, and they're inflation sensitive or not.

And -- and my understanding is they may not be perfectly correlated with CPI, can't -- can -- the Consumer Price Index, but they're highly correlated, and there's nothing better than real

return bonds to hedge that risk.

T-bills can do it over the short horizon, but not as well as real return bonds, actually, because with T-bills, you buy them at a discount, and they mature, and then you reinvest them. The RRBs, you lock it in from the day you get it. Our -- with real return bonds, they have some real interest rate exposure, but you do have that with T-bills as well. The question is one of duration. So T-bills are short. RRBs are long. Both inflation protect.

Nominal bonds don't. Nominal bonds expose you to unexpected inflation, and the pricing of nominal bonds, a regular bond without inflation protection, we embed in that some notion of risk that says inflation could be higher. So there might be this premium risk that I should impose on them, and therefore earn a higher return on nominal bonds than infla -- than real return bonds.

Real return bonds shouldn't give you -- you shouldn't expect the goalie to score goals. They're there to stop the puck. That's -- that's as simple as I can put it.

Now, this is a big simplification that both MPI and Mercer have made. And in the case of

MPI, they said that there -- they based in defining the minimum risk portfolio, the liability benchmark portfolio, MPI said they based in -- in the CAC/MPI-2.2 -- 2-2, they said that they based their low risk assessment of inflation primarily on the expected level.

I underlined the word "level." So that has to do with the average. The Bank of Canada has a target average of 2 percent inflation, but there's volatility around it. They can't control it perfectly. They may have some control over inflation, but there's some volatility around it, and it -- and in the current environment, that volatility is very low, and we can show that in some of the Canadian Institute of Actuaries data that I -- that I included in some of the IRs.

Mercer's language, and I believe this bullet is a direct quote from CAC/MPI-2-4, is that they supported hedging the nominal risk before the real, and that that was driven by their views of the expected level of future level and inflation, as distinct from the volatility. And that's important.

And again, if inflation is 2 percent or ten (10), if they're both nonvolatile, they're stable, people will price that in when they price fixed income

bonds, nominal bonds. If -- the question really is about volatility inflation, not the level.

And it's the -- and again, when -- when asked through a question of ours what the tracking error of picking one (1) liability benchmark over the other, the number was 4 1/2 percent. I did not check it, but I knew it would be big, because if you look at one of the slides -- and let me see if it's on the next one.

Later on, we'll show the composition, but the two (2) different liability proxies for the true liabilities are very different. They have the same duration, ten (10) for Basic, but their exposure is different. One (1) is exposed to inflation risk and drops or changes in real interest rates. The other one's exposed just to nominal interest rate risk.

And the difference is -- is not only large, four and a half (4 1/2), in absolute terms, but when you measure it in relation to the risk level that you're operating at, which, in the real liability benchmark paradigm, is 3.8 percent, that's the graph number at the bottom -- at least that was the current number, it may be lower based on the plan -- I think it would be, because there's less equities in it --

then the -- this tracking error, the term is called, that error is -- is a big proportion of the underlying base that we're trying to manage, 118 percent. So that's not trivial.

Let me go to slide 13.

EXAMINATION-IN-CHIEF BY DR. BYRON WILLIAMS:

DR. BYRON WILLIAMS: Mr. Viola --

MR. VALTER VIOLA: Yeah.

DR. BYRON WILLIAMS: -- just before you leave this slide, when you talk about a 4.5 percent tracking error --

MR. VALTER VIOLA: Sure.

DR. BYRON WILLIAMS: -- that is between what and what?

MR. VALTER VIOLA: Yes. So that's -- that's the -- that's the difference in -- that's the -- that's -- that's -- let's say that that's the mismeasurement, I would say, between the -- by picking the wrong reference point. I -- I believe that the liabilities have inflation sensitivity, and Mercer pushed the numbers, and they defined the least risky portfolio that proxies the liabilities. But that four and a half (4 1/2) says, that's the performance difference between what I think is a better

characterization of the behaviour of the liabilities than what's being modelled. And so it's kind of a -- it's a measurement issue.

DR. BYRON WILLIAMS: Okay. So -- so just to -- to finish so that's a 4.5 percent between the nominal liability --

MR. VALTER VIOLA: Yes.

DR. BYRON WILLIAMS: -- portfolio and --

MR. VALTER VIOLA: And the --

DR. BYRON WILLIAMS: -- the real liability portfolio?

MR. VALTER VIOLA: Yes. Yes.

So jumping to 13, we're coming to the end of the -- the beliefs, and then we'll jump into quickly the -- the meat of the matter, although we'll have covered a lot of it through this exercise. Beliefs 3 and 4, related to the marginal concept of risk and taking a total portfolio or team approach.

And -- and again, this comes back to the inconvenient truth earlier that says, you know, risk math is messy. Correlations matter. The curve is curved. It's not a straight line, otherwise we would just simply say you take more risk, you get a linear increase in return. It's -- it's bent.

Unfortunately, correlations are harder to interpret, we'll see what some of the numbers say, but they're critical, so better to be approximately right than ignore them altogether. And it's particularly important given the number I just talked about, 4 1/2 percent, in the context of defining the liability benchmark portfolio.

And it's especially true when you think even though the duration is ten (10) years for the liability, we really have cash flows, half of which follow beyond ten (10). And -- you know, I had a quote from the actuary who says none of us are any good at forecasting interest rates and the longer horizon we get out there, the more difficult it becomes. So, those are the concerns I have.

Go to slide 14, please. Thank you. And in terms of market efficiency, this is a legacy one. You'll recall that two (2) years ago when I -- my focus was really on the risky bucket -- I've got the buckets at the bottom here on the -- on the left. And, again, that's an efficient frontier in your space, which is assets versus liabilities, and it's basically saying, you know, if you think of a capital asset pricing model, I talked about this two (2) years ago, the insights of capital market theory, when they

-- when you're just talking about assets and not polluting it with liabilities, the conclusion is this thing called the separation theorem.

It basically says, in that case where its assets only, it's not a curved line, it's straight and it basically says beta is the measure of risk, marginal contribution to risk. And it basically says investors, if we all have the same expectations, if we have -- we will only differ in our portfolio choices by deciding to allocate different amounts of water in each of the risk year or risk-free bucket.

What we won't do is when you look down into those portfolios, in terms of the risky bucket, the equities, you should see roughly the same mix between Canadian equity, US equity, foreign equity -- international equity. You might have a smaller amount of liquid in that bucket, because you don't like risky assets, you want to take less risks, so you put more water into your risk-free assets. But the characterization, the mix of it, the composition of those buckets should be the same.

So two (2) years ago I focused on the risky bucket, the white one. This year we're focusing on the other one, which is the composition of the liability benchmark portfolio. And when you look at

that bucket, across investors you should see a different composition because this is an insurance company that operates a pension plan, or has a pension plan as well and has to manage the assets in it.

That's very different from a Worker's Comp. fund or a pension plan that just does the pension assets, or you're in my RRSP and my RESP for my children. Those are all very different. We have different objectives and therefore a different risk-free bucket.

So if my time horizon is tomorrow, I'm not going to invest in the stock market, my least risky portfolio is T-bills, probably. But my least risky portfolio for this plan, for the two (2) portfolios that are the big ones, the Basic and the pension, that portfolio has certain characterizations. So the question really boils down to: Is there inflation risk in that or not? It's as simple as that. And we know the duration is long, and that's -- that's the issue that's on the table this year.

And again, for my perspective, I mentioned it earlier, but I think it's questionable, very questionable, to link your forecast about inflation, either the level or the volatility, with how you define what that risky bucket is. That's an

important point.

The liabilities are what they are. The opponent shows up and they're -- and you're playing them. And they are who they are. They either have skill or they don't. They're strong or they're weak. And you do your best to figure out how to outscore them. That's the strategy. That's who you put on the ice and who you keep on your roster, whether you trade at the deadline or not.

But that's a decision that depend -- that -- that's a decision about where you are along that spectrum and where you're pouring the water in and out of the bucket. But the actual composition of the bucket is -- should be -- should be the same for any bucket. Hopefully that's clear.

Fifteen (15), again, this is -- Katrine mentioned that I was at two (2) funds for a dozen years. CPP was -- I was there for 2000 to 2005, just for context, again, this is unchanged from two (2) years ago and it's just meant to be kept in here for completeness.

And again, as I said, my understanding is that MPI has an -- an undertaking to develop a framework and address some issues that were outstanding from two (2) years ago, and that it's not

a trivial exercise to be more explicit about these important issues about how one defines risk, how much tolerance of risk they have, et cetera.

The second slide, 16. It was -- just elaborates on what the Canada Pension Plan Investment Board did while I was there. And -- and again, as I said earlier, I think MPI has -- should be commended on explicitly defining with Mercer what constitutes their liabilities, and it's really a question of measurement that concerns me, not the fact that they're doing it. I think it's commendable that they're doing that.

So, if we go to page 17 and 18, this is really just, again, prior to joining CPP, I was at Ontario Teachers and I extracted this two (2) years ago and it stands the test of time today and it'll -- I think it'll always stand the test of time, only the numbers will change.

But what they've said is basically that they're in the business of managing surplus. Mercer and MPI call it the excess return volatility assets versus liability. And the -- these are their words, so they're focused on real interest rates, they're focused on inflation. You don't see them talking about nominal interest rate risk, because that falls

out of those two (2) components.

And the one (1) thing to recognize, I don't show it here, I'll show it later. But they have a really good goalie and they have really good forwards. And so, even though they have a higher tolerance for risk than MPI, they still have a goalie that's really good in the net, and that's the key point from that.

If you look at slide 18, again, this was roughly the period that I was, yes, roughly I was -- I was at Ontario Teachers. So this was the annual report at 2000, just before I went to CPP, and these were the good old days. Real interest rates. This is a real return bond shown here, unchanged from two (2) years ago.

It was not -- it reached almost 5 percent real. Those were great. If you could lock in 5 percent real and be inflation protected, you could shut a lot of -- a lot of plans are shutting them down. Defined benefit plans are shooting them down -- shutting them down.

They would've liked -- they would have loved to see these rates. And that was just the point that, despite the fact that today real interest rates are a lot lower, when you fast-forward maybe you could

jump to slide 21 right now. Please. Thank you.

This is a time series, which hasn't been updated. It's from two (2) years ago, but this is the timeline of the asset mix of the Ontario Teachers plan, when we were focused primarily back then about the concentration in Canadian equity.

But the point -- thing to note here, the green box, is that they have 19 percent real rate products. So, I believe that excludes real estate and infrastructure. So that's really real return bonds. Some of them are US, some of them are private, they're not federal issues or provincial, but they've got $1 dollar in 5 at the end of 2015 in real return bonds.

And they have a lot more equities. They've got forty-four (44) in non-Canadian. This is back then, 2 percent in Canada, very small weight reflected in the global market cap.

But the point there is that they have a strong goalie, despite the fact that they're trying to score a lot of goals with a high equity content portfolio.

I looked at the annual report. The most recent one. They've reclassified some stuff. They've reduced -- and you can see as the -- as the -- as the time series goes from left to right from 2005

for the -- over the next decade, they rebalance and they find more opportunities.

The reason it -- it's blown out a lot is because they created opportunities. When I was there and I was actually the manager of this portfolio, the Bank of Canada restricted us from buying more than a quarter of the issue. We're a big fund and they wouldn't allow us to bid at the auction because they wanted RRBs to be distributed more widely.

So we went out and we backed up the truck and bought them in the US and then we created private opportunities, so we funded the 407 toll road in Toronto, for example, which is a real return bond.

So they basically said -- they went out of their way, not just to find the instruments that were on the table, because they were restricted from buying more, they actually went out and created more product. And despite that fact, they still take a lot of equity risk.

So you can have, again, from a total portfolio perspective, low-risk assets and really risky assets together usually give -- not usually, they do give better risk return trade-offs than being concentrated in either one (1) bucket -- within a

bucket, a risky bucket.

Let's go back one slide, and this is the CPP investment Board, and again, this -- I was there in 2000 and this was probably the first annual report that we published, 2001, March, so I just joined. And I put a red box around here noting again for fixed income assets, we've got real return bonds, they're on the vertical axis, i.e., low risk. They give a slightly higher expected return back then, versus treasury bills. They were longer duration. In other words, the yield curve was upward sloping.

But the government bonds, corporate bonds, because they don't offer real inflation protection, they should command a higher rate of return, because they are riskier in the context of our fund. This is the risk for our fund, which was our fund, literally our -- our Canada Pension Plan, which is we promised pensions to you, once you turned a certain age, and -- and there's some indexation of the inflation risk.

So -- so that's just for perspective that the things I'm talking about are not made up. These are the two (2) big funds that define risk a certain way, the liability benchmark portfolio, and it's -- it's clearly got inflation-sensitive risks.

So if we can jump to slide 22, we're finally to the recommendations.

MS. KATRINE DELAY: And, Mr. Viola, maybe I'll just interrupt, but I don't believe you talked about slide 19 and I'm just wondering if you wanted to do that one.

MR. VALTER VIOLA: Slide 19. I apologize, I skipped one.

Yes, so this one is identical to, I believe, the slide I presented two (2) years ago. I coloured it just to focus on the issues related to today. So this was in the context of real return bonds being an asset class you could invest in and the liability benchmark that your -- is your opponent.

And -- and what we said two (2) years ago was that some liabilities resemble real return bonds in terms of the nature of the flows. They're inflation sensitive in their long horizon, which real return bonds are. If you buy the TMX index, it has a duration of fifteen (15), that assumes you take no tracking error against that index. There's fourteen (14) issues. It assumes you're fully indexed, so you're not taking tracking error against that. But that's a long duration vehicle you could invest in.

So the real return bonds close -- I say

close, could closely match. There is some question is -- you know, isn't it how close are they, we can always beat them up. They're better than the alternative. You're not going to stick a forward in net and play goal. So they're better than the -- any next alternative, hands -- hands down.

And the insurance cost of buying real return bonds to hedge long-term inflation risk and real rate risk varies through time. All interest rates do and so does the cost of insurance, what you give up compared to taking more risk.

And nominal bonds are only a good fit if inflation is stable. Again, not the level 2 percent, it's 2 percent plus or minus X. And again, long-term, over ten (10) years it's hard to predict. So nominal bonds are much riskier in the long horizon because inflation volatility is more uncertain the longer horizon -- the longer the horizon we take into account.

And again, this is a carryforward. There's a tendency to ignore portfolio risk interdependence, again, not a silo approach, it's a team approach, correlations matter.

And again, assets that look risky in isolation or those that look low volatile, like T-

bills, for example, have low volatility. They mature in ninety (90) days and they're backed by the Government of Canada. Government of Canada is going to cut you a cheque and -- well, they're going to make good on the promise when that T-bill matures.

However, you have reinvestment rate risk. If interest rates stay low, you reinvest at maturity every ninety (90) days at a very low rate. With T-bills, rising interest rates really good, because when you get the money in ninety (90) days you get to reinvest not a 2, but a 3, then a 4, then a 5. Nominal bonds it's the opposite. If interest rates go up, you're taking a haircut because the capital gain -- the capital loss.

Anyways, that was -- that was the point of slide 19. I apologize for skipping over it.

So now we're into the recommendations and I'll go through again. I won't -- I won't talk about -- there's a couple that I'll just go through quickly. We talked a lot about the reliability benchmark, and I'll finish with number 8, the -- the use of quantitative models.

So if we jump to 23, for example, high level we already talked about the duration difference between Basic and pensions. Pensions has a longer

duration, i.e., the inherent risk and the liability is more volatile. It's harder to hedge that risk than something that matures on average at ten (10) years. So the pension plan is inherently higher risk.

If you look at the assets that make up the liability benchmark portfolio, I've included only the ones that were in the response to the two (2) questions we posed. So this is the real liability benchmark. So this says that in the case of Basic, if you said I want to take risk off the table because my infla -- because my liabilities are inflation sensitive and I'm exposed to real interest rate risk, this is the least risky portfolio according to Mercer's. Two-thirds of the portfolio would be in real return bonds, a quarter of the portfolio would be in T-bills that mature in ninety (90) days. The balance of eight (8) would be in short-term nominal provincial bonds, and that sums to 100 percent.

And again, the thing to note here is that it's heavily weighted to real return bonds and T-bills. And again, T-bills has a low duration, less than one (1) year, say ninety (90) days. RRBs average duration of fifteen (15) years and you net all those things out, the duration is ten (10) years. So that's the matching asset, according to Mercer.

In the case of the pension one, the next box below, it's got a longer duration and not surprising -- not surprisingly, the RRB allocation goes from sixty-six (66) to eighty-one (81). The -- the T-bills actually go short, you actually synthetically, if you could borrow money at 90-day T-bill rates, you would do so so that you could buy more real return bonds and you would have some provincial bonds as well.

Again, these are Mercer's number -- numbers, and I'm not sure if the short position is really a self-imposed constraint that they have to be indexed to the FTSE TMX Canada RB index, which is the last item. But as I think I will say shortly, there's fourteen (14) bonds in the real return bond index. And so there's a profile when you add all those fourteen (14) up with the weights that they are in the marketplace. The duration of the RB index. They're exchange traded funds that you could buy that basically you get all fourteen (14) real return bonds or whatever makes them up, maybe it's not all fourteen (14), in the weights that they exist.

There's no constraint that says if you decide to buy them or you decide to model the liability, that you have to use all fourteen (14) to

invest in or to designate them as the proxy for the liability.

You could weight them differently. And I don't know to what extent that negative 11 percent in the short is a function of the constraint to use the index with no tracking error, versus the fact that, no, that is the true economic profile.

But the punch-line is there's a lot of real return bonds in this portfolio, this least risky liability benchmark portfolio. If you look at the GRA and the one (1) that was proposed by MPI to use, its nominal bonds. So the issue is: What's the most appropriate reference point for measuring risk?

I talked about the fact that RRBs, regardless of the time horizon, measure -- sorry. They hedge the risk over the term to maturity that you worry about perfectly, in terms of inflation risk. And if you match then a duration basis, then you've got the price risk by changing real interest rates hedged as well.

There is a convexity effect, which is secondary, won't get into it, but it's the rate of change of the rate of change and -- but that convexity effect, as opposed to duration, is smaller and tends to work its way out.

Punch-line is RRBs are a good goalie, T-bills had shorter horizon inflation risk. But again, they have reinvestment rate risk because their duration is so low, less than one year, not ten (10) or sixteen (16). We can go to the next slide, please.

This is the tracking error I talked about, it's the difference. So if you look at the box in the bottom, this is -- this was in a lot of the preambles, or at least one (1) preamble of one of the questions we posed.

We've got two (2) portfolio -- liability benchmark portfolios. These are not actual portfolios, these are the liabilities, and there's two (2) types of liabilities. The basic one's on the left and the pension one's on the right.

And the columns within the basic one, say, is if you thought or characterized the liability as having characteristics that were real with inflation sensitivity, the bolded thing, you would say -- and again, these are the same numbers as the slide before, real return bonds at the very bottom says you would have 66 percent.

If you wanted to take risk off the table, what would you invest in? You would hedge most of the risk, recognizing you can't completely hedge

all risk, financial risk, you would put two-thirds (2/3)of your assets in real return bonds. And again, the duration of all of these things is either ten (10) or sixteen (16) depending on which portfolio you're talking about.

The difference the first set of colours, blue and red, shows how different those liability proxies are. The one (1) that MPI has proposed to use as a reference point for measuring their risk consists all of -- entirely of fixed income assets with nominal interest rate risk.

So they are exposed to differences in the yield curve between real and nominal shifts and inflation that turns out to be higher than perhaps expected.

So that's the difference in terms of the portfolio that least -- takes the least amount of risk in relation to the liability, and as I said, the tracking error, Mercer's number's 4 1/2.

And -- and we didn't get a number, we didn't ask what it would be for pensions, it's probably higher, but that's a guess. But it's material, given the differences in the colours on the right. There is more differences on the right they're on -- they're on the left, and they seem to be in one

(1) or two (2) rather than four (4) buckets. So other things equal that more concentrated nature and bigger gap would suggest that maybe that 4 1/2 might be a little higher in the case of pension, but pension is only 20 percent of the total.

So net/net the bigger the risk is probably in the Basic, the mismatch risk, if you will. The definition.

If we go to 25, we had raised this, I think in the evidence I've written that the focus on inflation horizon over the short horizon. Sorry, inflation risk over the short horizon as opposed to worrying about the inflation risk over the longer horizon, beyond ten (10) years in the case of Basic, and the real interest rate risks over that longer than ten (10) year horizon was -- was kind of equivalent to, in a dividend discount model looking at the equation of how a stock return gets its return from two (2) components. One (1) is the dividend yield, which is pretty stable, 1 or 2 or 3 percent, plus or minus a few basis points, versus the capital gain, which goes up and down a lot.

So again, this goes to our point of, you know, focusing more on shorter horizon, more predictable risks at the expense of thinking about the

instruments that we should think about buying even though they're not as good as they used to be, to hedge those longer horizon risks that we are not as well-equipped, because we don't have a crystal ball to forecast.

Page 26, there's a question from MPI that we answered, and I just wanted to summarize it because it wasn't in the GRA, it was subsequent to the filing.

The question was: Can you provide some documentation that supports the -- the notion that real yields are really risky on the heels of the prior slide? And so, if you jump to the next slide, for example, we blow that up, it's even hard to read here.

But if you look at -- I've highlighted in yellow, and this is from the Canadian Institute of Actuaries. I've highlighted in yellow -- yes, just leave it there, please. Thank you. So we can see the headers at the top.

I've highlighted the CPI, the inflation, these are annual -- these are annualized numbers over different periods. Five (5) years, ten (10) years, going down the left column, fifteen (15) years, twenty-five (25), fifty (50) years, seventy-five (75), all years.

You have to be careful because some of the series don't go back that far. If you look across to the real return bond column, the yellow on the right that's highlighted, if you look at the very bottom in the twenty-five (25) year matrix, they've only been issued since 1991 or '92. So they've only got a 26-year history.

So there's only a one 25-year line item and what it says is that the -- and these are standard deviations, so this is volatility. This is the measure of dispersion, how volatile are these things. And the three (3) things of interest are: inflation, long bonds from -- issued by the Government of Canada, and real return bonds, mostly Canada bonds, some provincials.

Not strictly comparable because the duration might be a little different between the long bonds and the real return bonds, but order in magnitude you get the story.

So if you look at the bottom right yellow, you'll see in the real return bond over the last twenty-five (25) years, from 1993 to 2017, real return bonds has a volatility of 10 percent, that's what it was.

If you look left you say, okay, what

was the volatility of long bonds, and it was nine -- actually it's bad, 9.5. So not hugely different, and part of it could be that the RRBs have a longer duration. If they have a longer duration they should have a higher volatility. I don't know exactly what the Canada long bond duration is, but it's a long bond.

And so that makes sense when you look further left and you say: Well, how stable is the inflation environment? That's the first column, bottom left, and it's .8 percent.

So, if you look above the .8 it shows you over the prior twenty-five (25) year periods how it -- how volatile was inflation over that quarter century period ending in 2017, 1992, and I believe when my wife was born, in 1967.

And what you'll see is that inflation volatility has certainly come down, it's come down from 3 3/4 to 3 percent to .8. So we're living in unique times, inflation is not volatile. It hasn't been historically, but the question then is if you had to -- do you have a crystal ball to say it's going to stay like that in the future.

And the one (1) thing we know is that we're not very good at forecasting interest rates and

components, even though the Bank of Canada says we're going to stay in this ban, their ability to stay there is questionable.

But to the more important point, the question is: Is it worth taking the extra risk when the cost of insuring to hedge it seems like it's fair, even though it's more costly than it used to be? That's the relevant question.

So those are the key points from that. Let me just make sure that I've covered the points on slide 26.

I guess we'll just focus at the bottom of page 26, those points, I guess in the last five (5) year period, we will note again, this is the data so what from the table I just went through for the -- from the Canadian Institute of Actuaries on volatility, I didn't mention it, we can go back to it in a minute.

But the bond volatility has gone down from 14 1/2 to 8.8. So that's a dramatic drop, not quite half. Inflation volatility I said went down to .8 from close to 3 and 4 percent per year. And there's no trend in our -- our real return bond volatility, which -- which to me makes sense.

Real yields have come down, but they're

still volatile.

And again, the top two (2) points falling volatility in bonds and falling inflation volatility go hand-in-hand. And again, the only reason we care about all of this is that if inflation volatility is not zero, nominal bonds and real return bonds behave differently, and your liabilities depend really on -- there's a tracking year based on which one you believe to be more accurate.

28 is -- this was when we may just sort of need to break after this slide, if we want to go into something more confidential. The -- this shows correlations. This was in -- this is the preamble to one of the questions and this is -- this is Mercers data.

Column 5 represents the correlation of real return bond returns with other assets. Here I've shown only the debt instruments, fixed income, no equities in here. And what you'll see, the important thing to note is the difference in the column, the box in column 5, which is saying how do real return bonds returns correlate or vary with other bonds.

And so if you look at column 5 and you go up from the bottom, the .7 at the bottom right says that real return bonds have a .7 correlation with

provincial long-term bonds. And the -- and the -- and the correlation will fall as you go to midterm and short-term bonds, because the duration gap between the real return bonds, which have a fifteen (15) year duration and these other provincial bonds which have long been mid and short bonds, it's not surprising that the correlation will be different.

So it's falling. When you go from right to left, starting at .7 at the bottom right, what you're saying is, let's look at the column 4, where column 4 is federal bonds and long-term, so they're comparable to the real return bonds because they're long-term, similar credit risk because the real return bonds, although they have about 10 percent provincials, they don't have a lot of them. So it's a little bit of apples and bananas, but not much, still fruit.

If you compare that and you look down -- if you go starting at the bottom of the fourth column at .89, row 8, you will see that those numbers are all higher than the right column. So when you're talking about federal bonds, it has a high correlation with long-term provincial because they both don't have inflation protection, and they're both long. And when you go to mid term, it's still high and it's still

pretty high with short term.

But when you look to the right, those two (2) columns are quite different. The left column is always higher than the -- the right. In other words, the punch-line of this is to say if your liability benchmark portfolio has a significant component of RRBs, this is where the basis risk or tracking error arises in part, because that liability portfolio has a good chunk of the column 5 characteristics.

But if you have assets -- well basically, if you pick a liability benchmark that thinks it's more like the 4 column, it's going to be very different. So this is the source of the tracking error, if you will.

So that's -- the next -- the next -- so that was issue number 1, which is the most important issue, I believe, recommendation 1. So I've covered that.

The next one is a leverage constraint. I don't think it's a particularly big issue that -- and we can skip it --

THE CHAIRPERSON: You know, Mr. Viola, I'm sorry to interrupt, but you can decide if you want to skip it or not, but I think maybe we'll break for

lunch now until 1:30 and then we'll resume your -- your direct evidence.

And we will be doing the CSI, as I understand it, after the completion of Mr. Viola's evidence in cross-examination.

DR. BYRON WILLIAMS: That's our plan unless Mr. Viola advises me otherwise. But that's what I'm going to recommend to him.

THE CHAIRPERSON: Thank you. We'll adjourn till 1:30. Thank you.

--- Upon recessing at 11:51 a.m.

--- Upon resuming at 1:31 p.m.

THE CHAIRPERSON: Good afternoon. If we could resume.

CONTINUED BY DR. BYRON WILLIAMS:

MR. VALTER VIOLA: All set, thank you. Good afternoon. I just want to go back to slide 28, because I think I was not as focused on the one (1) column that I perhaps should have focused on.

If we look back at 28. These are forward -- these are Mercer's estimates of correlations and, as I said earlier today,

correlations are important, but they're hard to take into account.

And in the fifth column that relates the correlation of real return bond returns to other fixed income assets. Those other fixed income assets don't have a protection against inflation risk. So other things equal, if inflation turns out to be higher, those nominal bonds whether they're provincial, federal or corporate, short, mid or long they'll do worse because of expected -- inflation turning out to be higher than otherwise.

Real return bonds, of course, hedge that risk. And the thing to note in column 5 is that those numbers are not one (1). In other words, if you look at the bottom right number of .7, that's the correlation between real return bonds and provincial long-term bonds. And while .7 is not zero uncorrelated it's not 100 percent either, which means that's where the bulk of the tracking error between the liability benchmark portfolios arises. The selection of a nominal liability benchmark by MPI as distinct from one that I think is more appropriate, which is one that consists primarily of real return bonds.

So that 4 1/2 percent tracking error

that -- that I described arises because the correlation between RRBs in column 5 and the other assets in say, row 8, at .7 is 100 percent. So that's where that comes from.

And then a related or unrelated thing is the fact that, given that the real -- the liability I believe truly has inflation risk in it by not investing in assets that protect against inflation risk, the measured risk using the adopted liability benchmark portfolio by not capturing this inflation risk properly we're not properly measuring the true risk of having nominal bonds support real liabilities.

So that mismeasurement is I believe important to correct by re-specifying or thinking about the liability benchmark portfolio differently. Hopefully that makes the key points I wanted to make with less confusion potentially.

We're going to skip over the leverage constraint slide 30, because it wasn't a major point. On slide 30, this is the third recommendation of 8 and relates to the duration policy. And the issue there is the suggestion that perhaps the duration policy which uses nominal bonds to hedge what I believe to be a real liability benchmark portfolio should be revisited to take into a fact -- into account the fact

that inflation volatility while it has been lower the last five (5) years may not over the time horizon that we are contemplating making asset mix decisions, policy decision should take into account very long horizons, decades, that assuming that inflation will remain non-volatile over a very long period of time is -- is a potentially risky thing to do or assume.

The view that MPI took two (2) years ago, they agreed that duration matching, as their policy is written, and implemented, is not as effective if inflation, in fact, differs from what we expect it to be. And they said that they accepted the short-term inflation risk and accounted for that risk through margins and reserves, and this excess portfolio was designed to provide some protection if, in fact, inflation were to become a problem.

The next box refers to the rate risk, interest rate risk, and again, this is the formula that I indicated in the terminology at the front and the important point to note here is that unless that third term, where it says Sigma, the last -- the very last term with the subscript pi, that's the inflation volatility. Unless that thing is zero and if that is -- that second term is also zero, other than that, if -- unless those two (2) things are zero inflation

volatility impacts the volatility of nominal interest rates.

And so, in other words, nominal rates and real rates will not go up and down together. It may be highly correlated but they're not perfectly correlated, and in the next slide we'll talk about -- which we won't go to yet -- we'll talk about the scenarios, three (3) of them that could give rise to significantly different performances for three (3) kinds of assets: T-bills, nominal bonds and real return bonds.

We talked about the 4 1/2 percent tracking error and that arises again because of that lack of perfect correlation between real return bonds and other nominal bonds of different varying durations or maturities.

Again, just throwing out on the table. Simplicity is great, but sometimes we put some constraints in the policies that we develop and those constraints I've argued in the past have some real cost potentially.

One (1) thought if this does get revisited is thinking about the duration risks that are inherent in the liabilities and, again, recognizing that when we say that Basic liability

duration has a mean or average of ten (10) years, and that's the policy that you're setting bounds around that, the duration of the fixed income portfolio has to be plus or minus one-quarter year or .25 within that ten (10) or 10.3 -- I forget the exact number -- one might think about, again, thinking differently about, well, what duration are we talking about; nominal interest rate risk or real; shorter horizon where I have more predictability about the stability and level of inflation the next five (5) years as distinct from ten (10), fifteen (15) and twenty (20) years, and maybe you use different instruments in a two-tiered sort of policy.

But those are the things that come to mind to suggest that, you know, simplicity is great but a little bit of complication while still not being overly complicated may sort of enable you to better manage the true risks that are underlying the portfolio in relation to the liabilities without a lot of effort.

And again, I had mentioned this earlier, the FTSE TMX Canada real return bond index is an index that consists of I believe fourteen -- there are fourteen (14) issues that are out there. I believe they're all in there, but I'm not sure. They're

mostly federal bond issues, and whether the fund decides to invest in real return bonds at some point or at least use them as a proxy for what the least risky portfolio is representing the liabilities. There's no requirement per se to presume that you have to hold them or model them as liabilities in proportion that they exist.

In other words, if there's fourteen (14) bonds, you don't have to hold them all in this liability benchmark portfolio and you could, again, in a blended fashion where you rethink the duration policy consisting of both nominal and real rate risks that you are managing in an integrated fashion, it could be that you sort of view RRBs as the core holding or the core instrument that takes most of the risk off the table and the nominal bonds may be the substitute that's the backup goalie that serves as a supplement, but not the primary means to mitigate that kind of risk. So those are my thoughts on duration policy.

If we go to slide 31. A related point is what's going on in the actual portfolio at fixed income resulting from the asset liability study. And to my way of thinking, I'll only talk about the top panel, in particular, for now.

But, we can go through a couple of scenarios. I've done three (3) across the top. Green is good; red is bad in terms of actual performance of instruments or liabilities. And so the issue here is to really rethink the decision to lengthen nominal bond duration to this 10 percent in Basic -- or 10, recognizing that there were various reasons that had caused the measurement of the liability duration to go longer.

But again, if you're using nominal bonds to manage duration against a real liability lengthening duration creates more inflation risk in the nominal bond portfolio. So even though the view might be that in the next few years, you don't have a lot of concerns about inflation, we're really talking about a ten (10) year matching which contemplates the average. So you're really hedging things beyond ten (10) years with nominal products that are exposed to inflation risk.

If you go through this -- some scenario analysis, and say, well, what if inflation turns out to be higher than expected, recognizing that people factor that in to the pricing of the bonds that they buy, nominal bonds. Well, if inflation goes higher than expected, real return bonds they're hedge.

That's -- by definition they're -- they're okay. So if inflation turns out to be higher than expected, that is a good thing in a relative sense compared to the alternative of buying bonds, nominal bonds.

Not only do you get the inflation protection and don't suffer the losses that you would otherwise get because nominal bonds would go down in value, the real yields may actually fall because there might be a flight to those real return protecting assets. People won't want to buy that insurance and with real yields going down, the cost of buying it will go down -- will go up. There's an inverse relationship and if you happen to hold those, you get the POP.

In staying in that single column, again, inflation greater than expected, T-bills will actually do well because, again, T-bills will mature within the next year. Let's say you have ninety (90) day T-bills, as they mature and if inflation turns out to be higher and people go, oh, this is here to stay or it's more volatile and I need to put a margin of safety in, then when you reinvest your T-bill when it matures in three (3) months or six (6) months, you're going to reinvest it at a higher and higher and higher rate.

And because you're turning the portfolio over twelve (12) times a year, say, or six (6) times a year or quarterly, four (4) times a year, you're going to capture that increasing rate and actually earn that return because of the short duration of T-bills.

That's not true when you go to the bottom where it says "bonds." How do bonds do when inflation turns out to be higher than expected because of the long duration if inflation expectations -- if inflation becomes higher than it was expected, and people believe that, oh, all in the future it's going to stay at that high level or be more volatile, bonds will do poorly because people need to be compensated for the extra risks they're taking for bearing inflation risk. And so bonds will go down in price. And they'll do worse the longer the duration.

And so that begs the question: Well, what's our view over the next little while? Do we think nominal interest rates are going to continue to start creeping up, in which case, bonds will not do very well and the more interest rates go up nominal, the worst those bonds will do and the worse they'll do the longer the term they are. So if you're going to ten (10) years lengthening it's not going to do as

well.

And then again in the other -- the far two (2) right quadrants I do the scenario, of course, and this is just the relationship between bond prices and yields. If -- if yields fall in the first category with -- are real yields falling, how do -- will real return bonds do they -- they do better. (sic) And that's -- that's what we mentioned earlier and the opposite should be true with the nominal bonds.

We won't talk about the middle box in the public forum because there's confidential information there, but the conclusion again, as I said, just to reiterate, is that the lengthening of the nominal duration in the fixed income portfolio creates greater risk of long-term instability in rates funding because the liabilities happen to be inflation sensitive.

So we can continue on and skip Slides 32 and 33 and 34. And so then we're back to now where we're not talking about the liability benchmark portfolio but the instruments that could be buying -- that you could be buying there. And again, we talked about the risk-free bucket versus the market or risky bucket. Here we're talking about potentially thinking

about the decision to exclude real return bonds from a portfolio, given the fact that the liabilities truly really have inflation risk.

And again, this is not something that surprising when you look at the analysis that Mercer did and it's on the following pages and we could flip to those right away. There's a cost to imposing a constraint, in this case, not having a dollar in real return bonds and the actual portfolios.

So if you slip -- skip to slide 36. This one is for Basic and the next slide which we'll jump to in a minute if for the pension portfolios. So back to Basic on slide 36. This is Mercer's data and my eyesight's going to fail me. And in this case, they didn't -- they normally put the box up there with the actual statistics. So this is why we've put in here this is -- the 80 basis points cost here is my estimate based on a visual of the graph.

And so I had to pick one (1) point, but that -- that's -- I guess it's a brown coloured bar, is it? Let's call it brown at the bottom that crosses the dot at the current, at that point, that was the current portfolio, whatever it was when the GRA was filed. And what that says is that at that current portfolio, there was a certain amount of risk, 3.8

percent.

And at -- and at that point, there are no real return bonds in there and -- and it's -- it's actually -- the dot seems to be a little bit below that brown line. But there's no real return bonds in that portfolio.

You will recall that the request for the analysis that we made to MPI was related to the analysis using a real liability benchmark portfolio. I thought Mercer and MPI did a great job of describing the impact of different constraints and additions of new asset classes for the nominal liability benchmark portfolio through the GRA.

And our question simply said, What if you did that same analysis, added real return bonds, and took them out, put more into private equity, what have you, what would that look like?

This graph shows the impact of doing -- I think doing all those steps and -- and the last one was: What if you took real return bonds out?

So that upper efficient frontier, that upper graph, actually includes real return bonds across the spectrum and that's the key point.

And remember what we are trying to do, we're trying to go northwest to Alaska from Winnipeg,

which is where we are currently. We would like to go up higher return for any given level of risk and left, less risk for any given level return.

We'd like to get way up to the top left quadrant, but given our capital market assumptions and the fact that -- well, just reality is we can't get all the way where we'd like to do, returns don't just get us there.

So the best we can do is get along in efficient frontier and we can choose to be somewhere along that efficient frontier, but we generally don't go -- not generally, we'd never want to be below the efficient frontier.

And so the vertical distance between the top line measured at the current level of risk, and -- not the dot current, but that brown curve which is close to the dot, that represents the opportunity cost, the ha -- the lower return for the same level of risk by not allowing MPI -- or choosing not to put real return bonds in your portfolio.

And again, I don't have the actual number that corresponds with how many RRBs would be in that portfolio 'cause Mercer didn't put the table down, but that's okay, but we can go into what the -- some of the numbers might be along the curve ranging

from low to high.

And as you'll see the top curve, if you follow it along, the difference between the brown curve lower one and the top one narrows because as you go along from left to right, you're taking more risks so you're putting more into equities; real estate; infrastructure, away from fixed income.

Along the top curve you're taking money away from real return bonds.

Along the bottom curve you're taking money away from nominal bonds.

And as you'll see, the difference between the curve will get narrower and narrower. In other words, when you are prepared to take a lot of risk, not being able to invest in a better hedge doesn't cost you as much 'cause you're prepared to take the risk.

But when you move to the left and you say, I have a lower tolerance for risk, that cost becomes higher and you can measure the cost two (2) ways: Foregone return vertically or for a given level of return that you required, what's the extra volatility I'm going to expect in my funding?

And what you should look at is perhaps this vertical distance -- sorry -- this distance

moving from right to left of the dot, and you'll see that -- that's kind of a big rectangle and -- and if you flip to the next slide, you compare it to the next slide, the numbers change a fair bit.

In this case, this is the pension fund and recall that the pension fund has a duration for the liability of sixteen (16) years, not ten (10). So the pension obligation is inherently riskier to fund and -- but at the current level, as I understand it, it has riskier assets in it compared to Basic, for example.

And so given that your farther along the right, it's not strictly comparable 'cause they're different basis for measurement, but you're actually farther along the risk spectrum moving from left to right in the pension fund space.

So the cost is a little smaller. Originally I -- I -- I had a -- a mental break. I ya -- I did the dist -- I -- I calculated the distance wrong. I grabbed the wrong curve. It should have been the top two (2) curves, and I think I grabbed one of the bottom ones by accident.

So my initial filing said that the cost of not being able to invest in RRBs was 1.8 percent, and that's not -- that wasn't correct, so that the

cost is only twenty (20) basis points, again, eye-balling it because I don't have the numbers in front of me.

DR. BYRON WILLIAMS: Mr. Viola, just from this point, when you say twenty (20) basis points ---

MR. VALTER VIOLA: Yeah.

DR. BYRON WILLIAMS: You're referring to the pension portfolio, sir?

MR. VALTER VIOLA: Correct.

DR. BYRON WILLIAMS: And the -- the eighty (80) basis points relates to the classic portfolio.

MR. VALTER VIOLA: Correct. Yeah, and again by roughly in size, as I, again I didn't look at the numbers this year, but when I did it two (2) years ago, roughly the Basic portfolio the size of the liability was about 80 percent of the total liability with the pensions being about 20 percent. So it's kind of an 80/20 split in terms of the obligations, the cop -- the present value of the liabilities on the balance sheet.

So that's -- so that slide -- going back to slide 36, please. That is -- again, these are Mercer's numbers. They're forward-looking and the

point that they make, they're observations, I'll repeat, it says that, assuming a real liability benchmark, which was the question we posed saying, no, we believe the liabilities are real. They have inflation risk. So what would the risk return trade-offs look like in that environment?

And their conclusion or observation was that, assuming a reliability benchmark removing real return bonds significantly reduces an opportunity for improvement at lower risk levels, and that you'll see that again.

The distance, moving from right to left if you said, I really don't have a lot of tolerance for risk and I'm moving from the current portfolio and I want to go left, if you're not allowed to get to that upper curve, you're really forcing -- you're forced to take some, I would say, undue risk, more risk than you could otherwise, if you were allowed to invest in this real return bond.

And, again, when you -- when you're moving the portfolio and removing a constraint, not allowing one (1) asset to be in, it -- it should cause you to re-balance based on all the other assets.

So, for example, if we constrain real a -- real return bonds not to be in here, it matters if

you have real estate or not in the portfolio in terms of what the model will tell you is the next optimal decision.

So it's not a pair wise comparison if I take RRBs out and substitute nominal bonds, you kinda have to hit the reset button and go, what does that due to the whole portfolio that's left when you put these constraints on 'cause there's shifts between risky assets, as well.

So that's -- so now if we could jump to question, slide 38. These are, again, I'm -- I've addressed these here because they weren't in the original GRA filing. They were questions from the Utilities Board.

This question was posed to us regarding the availability of real return bonds for the MPI portfolio now or in the future. And so my response to that was factual as I understood it. So the current market size of the real return bonds is roughly fourteen (14) in the index, there's about $84 billion based on just the review of, I think, sometime in October of what the issue of market value was.

The average term to maturity of these fourteen (14) bonds is about twenty-five (25) years, and again, the term to maturity and the duration are

related, but the duration is always lower than the average term because of the discounting process.

So it's roughly a fifteen (15) year duration, so if you were to buy the index you would get a blended average real duration sensitivity of fifteen (15) on your now -- on your real return bonds. It's certainly not a big market compared to the more liquid publicly-traded -- the nominal bonds, government bonds, prov -- provincials, corporate, et cetera.

The turnover on real return bonds will be low. These are just kind of like, you know, it's like, you know, it's like you -- you buy house insurance and you hold it for ten (10) years. You buy term life insurance and -- and/or home insurance.

It's -- it's -- it's an insurance policy and so you buy and hold it. You don't flip it every day and buy -- substitute and change providers. And so if you said, well, yeah, there might be a, you know, a premium cost to get in because there's not a lot of them, the good news is, even if you had to pay a little bit of extra, and this is the argument I -- I used to manage a portfolio at Ontario Teachers and the traders hated me because they knew I was going one (1) way.

We were buying them and he actually -- one (1) of the traders actually said, can I -- can I sell 300 million today? I mean, they had a big book, and I'm like -- we -- we need them and it's because he was getting hosed on the price.

So he's -- he -- they're making a market and the traders want to beat the benchmark. They're not interested in necessarily acquiring them. That's why we took over the -- the -- the portfolio and said we're going to take the haircut. We're going to pay a little bit more, but we want to back up the truck and get more.

If we're going to hold them for twenty (20) years paying -- paying a few basis points today amortized over twenty (20) years is peanuts. It's a rounding error.

If you have a mental trading model in mind or trading -- trading mentality, then, yes, it's a -- it's a -- it's a cost, but if you're just going -- if you're using it to properly better manage the risk in the portfolio, it's a cost worth paying.

And the cost doesn't seem to me to be huge given the breakeven inflation rates that I've seen quoted by Mercer in the -- in the -- in the GRA, as well as the fact that, again, we're not doing a

pairs trade between real return bonds and nominal bonds.

We're saying if they make sense from a -- for the portfolio and they free up a lot of risk, it allows you to take other kinds of risk not just inflation risk cause you've tied that up. You could take credit risk, you could take equity risk and let the Optimizer tell you what that does and those efficient frontiers that I showed you, that's what Mercer's analysis is designed to do.

So -- so buying these products releases a risk. It frees it up to take it where it can be more attractively deployed from a return perspective. Right now, the -- the -- the deployment of risk is concentrated on fixed income for credit, a little bit more illiquidity through private debt, potentially at some point, I don't -- they're not implemented yet, but I think there's plans to do so.

I was also asked about the future size of the real return mark -- market. Again, I don't follow the market so I don't know -- I don't talk to provinces or the government in terms of their funding programs, so I can't comment on whether there will be an appetite to issue more.

I will say, however, that future demand

for it once you get into your first -- if you decide that you -- that's what you want to do, all you have to do after that is to top it up to re-balance to portfolio weights. If real return bonds, say, underperform equities and other assets you have in your asset class -- in your asset mix, you have to re-balance target unless you have a view that they're under valued or overvalued which means you have to invest a little bit more each year just to keep them at the target weight whatever that happens to be.

The other thing, of course, is if you get new cash flows coming in that need to be deployed in the asset classes, that is a small -- usually the -- the new capital coming into the fund is a small percentage of the assets under management. Again, not a huge concern.

Slide 39. The question was, do I have any concerns about including RRBs in either of the portfolios? And the quick answer is no. And again, Mercer's -- I'm not saying anything that Mercer didn't show in the analysis.

Constraining the RRBs made the curve shift down, and we said there was a one (1) point -- one (1) point -- sorry, what was the -- sorry, eighty (80) basis points cost in the case of the Basic and

twenty (20) basis points cost of not allowing real return bonds in the portfolio, recognizing that it's not a pairs trade.

We're not just substituting nominal bonds and taking real return bonds and buying them, if you were to buy them. I think you'd revisit the whole portfolio and in -- in that context, I don't have concerns because that -- the model shifts for those allocations and those -- those quantitative metrics that Mercer pushed, I have no reason to believe that they're not accurate.

So across the risk spectrum ri -- risk-adjusted returns should improve by including real return bonds. That's -- that's the end of that slide.

Slide 40 we're -- we're in the home stretch here. The other real ass -- the other real assets I think the Utilities Board asked about -- well, first of all, let's talk about the issue.

The issue is the proposal by MPI is to reduce the exposure to real a -- estate and infrastructure, and those are really the only assets that are providing any inflation protection. They don't have real return bonds in the portfolio, so that's doing two (2) things. One, it's creating more unhedged risk of a longer time horizon nature and --

and it's less diversified as well. So you've got more concentration of assets in one (1) bucket called fixed income.

I think I was asked by the Utilities Board in a question about the size of real estate and infrastructure. I don't comment on -- on it here. But again, if you let the model optimize it'll -- it'll look at that risky bucket and say real estate is not risk-free. It's got some risk, so does infra -- infrastructure and what you say, you know, theory would suggest that if you look in that risky bucket and you look and say, what does it consists of, you should see the mix staying roughly the same regardless of the tolerance for risk.

So it's -- you really have -- somebody one said it and I'll repeat and I'm sure I said it two (2) years ago. There was a colleague of mine, he said an optimizer has never seen an asset class it hasn't loved. If -- if there's a new asset class being introduced and you push it into the model, the -- the op -- optimizer will always say, unless there's some -- unless there's a perfect correlation, I'm going to like that for a little bit.

So by not having these assets, real return bonds in the portfolio, you really have to have

strong views about them. You either constrain them for a reason that may not be appropriate, or you really must be -- you really must think they're terrible assets. And real return bonds are not terrible assets, and other assets like real estate and infrastructure have desirable properties. I have some concern that lightening up on those results is, again, less diversification and more inflation risk.

Jumping to slide 41, I've talked about the fixed-income conc -- concentration. There's nothing wrong with taking credit risk. There's nothing talk -- nothing wrong with taking liquidity risk, even in the private debt. Absolutely nothing. It's just that, given the low tolerance for risk, all of the risk is now being more concentrated in these things. And of course, nominal bonds create the biggest risk of inflation risk long term.

And the -- that slide 41 -- 42, rather, just compares different current portfolio C, using the terminology that Mercer used in their asset liability study -- studies. This shows just for -- well, it breaks out all the asset classes. The top asset classes in the top half of the panel show a fixed-income. It says that the current portfolio in column C has 70 percent fixed income. And you go from left

to right.

If you -- if -- using Mercer's data, if you said, well, what if -- what is -- what does the portfolio look like, like, if I want to take the same amount of risk? It says portfolio B has about the same, so there's not a lot, and the proposal is to -- obviously, to move and -- and put a hundred percent in fixed income, and have no equities, no real estate, no infrastructure.

So if you look at the far right column, the difference between the proposed one by MPI, and the one with the same risk, B, the red shows you the big changes negatively of what they're being proposed. So they're -- they're basically, relative to the -- to the portfolio, that would be optimal had they just said, let the optimizer tell me what I want.

So there's a few moving parts in the sense that 'P' minus 'B' does not have the same level of risk. That's why the bottom right quadrant, I didn't put the numbers in, because they weren't provided, so I can't tell you whether the -- the -- what the difference in the return and volatility is between the proposed portfolio and the one that would have the same risk. The only thing I would note is that, again, it's -- it's cont -- the proposed one has

a hundred percent of the risk concentrated in bonds that have inflation risk, and that may not be efficient. Well, we know that Mercer's numbers show that it's not efficient.

And then the last penultimate slide is 43, quantitative models. In the evidence, I just -- I'd like the observation by the actuary. I think Mr. Cheng -- Cheng is right, that over a very long horizon -- well, I don't know, but nobody -- somebody might, but they might be lucky -- can forecast interest rates. And interest rates, the two (2) important components are the real and the inflation.

And so when we have a long time horizon beyond ten (10) years, the question is, do you really want to build your portfolio with so much confidence about these things that are less predictable, or do you want to take a bit of risk off the table and maybe move it into another bucket? And maybe -- and then you definitely have higher risk-adjusted return, same level of risk, a bit more return. That's the vertical shift of the cont -- of the efficient frontiers that we talked about earlier.

The -- the lower box is just a lift out of the evidence that I provided two (2) years ago, and it just -- and again, this notion that models, by

definition, are not reality, they're representations of reality, but there's errors in models, and there's a lot of assumptions that go into this. And one (1) of the points I made two (2) years ago that I wanted to reiterate this year is that the models really tell you what you tell them to tell you.

And so if you put in capital market assumptions that favour certain asset classes, the model's going to like them. If you make assumptions about the liabilities that don't truly reflect the nature of the liabilities, it's gonna like assets that look like the thing that you propose looks like the liability.

So it's very important to define the liability components accurately, because the model is very sensitive to that, and you see that in the different liability benchmark portfolios. Under the nominal one that was adopted, it came up with a certain set of outcomes. Mercer told us what those liability benchmark constituents were, all nominal instruments, all duration ten (10) years for Basic.

When asked about the real return assumption for the liability, they said it's 66 percent real return bonds for Basic, and 81 percent for pensions. That's very different. So that's

important.

And the final slide is really just a recap. We could have started with this first and just left it at that, but we -- we thought we'd go through all the rationale first, which is the right way to do it, but the punchline is this: there's eight (8) recommendations. The first one is really important.

So I suggest that we revisit the -- the -- MPI revisit the nominal liability benchmark, describe it more accurately. And I think it understates the true long-term risk of inflation and changes in real interest rates. And again, that -- that's just not me. Although I worked at two (2) funds for a dozen years, and who knows what they say today, but when I was there, the leaders of the fund, the executives, the staff, the Board, they all had the long horizon surplus management, and real interest rates matter, inflation matters.

And they still had long nominal bonds in the portfolio. But if you look back at the teachers time series, they've got one dollar ($1) in five (5) in real return bonds at the end of -- that was two (2) years ago, but it's not changed materially. They've gone down a little bit lately. They don't have 0 percent. They have strong --

believe very strongly -- you have to have very strong views to -- to not have those things in your portfolio.

The leverage constraint's not a big thing. The duration policy I talked about, and the lengthening, number 3 and 4, those are related. So the fact that we've got nominal bonds in the portfolio, not real ones, but the liabilities are real, and you lengthen nominal bonds to a longer duration, you run the risk, given their high -- greater sensitivity, that if inflation turns out to be more volatile than expected, or at a -- operating at a higher level, not 2 percent, but three (3), or -- or worse, your nominal bonds are going to do very poorly. Your real return bonds will do very well, will maintain purchasing power. And then they actually go up in value, because there might be a flight to quality, real return bonds and hedge risk, and you'll get a POP.

It would be nice to look back at the early '90s, when these real return bonds were issued. They were yielding almost 5 percent real. The reality is, we -- we can, and we can complain all we want about the low levels of real rates, but that's -- that's a -- that's not really very productive. The

question is, how much worse could it be, not how bad is it. It could be a lot worse by not having these things in the portfolio.

And so the cost of insuring against this risk has gone up, because the returns have gone down, because now we're reinvesting at lower yields, but that's just the -- that's just -- things get more expensive over time.

Real return bonds, number 5, and we think they're a great asset class, from a hedging point of view. And given the short term interest rate outlook that I see in the GRA, I think a case can be made that real return bonds will actually score some goals, despite being a goalie, better than nominal bonds. So they may actually outperform nominal bonds and cash, and so I think the worst asset class, if you believe the forecasts, whether they're naive or otherwise, RRBs don't look as bad as -- as perhaps some might suggest.

The other assets -- we talked about real estate and infrastructure. Again, some concern about lightening up on them when you don't have inflation protection to begin with. Concentration of fixed income -- there's always going to be concentration somewhere, and because you don't have

equities, it's going to be there.

And the only point there I was saying was that, you know, when you put -- when you take risk -- if you do a pairs trade between real return bonds and nominal, and you trade one off for whenever, and you -- and you only count the goals, but not the risk reduction, you're crowding out real return bonds. In a total portfolio context, when you look at it that way, it's hard not to have real return bonds in the portfolio. And then commensurate changes around in the other portfolios that, basically, with the freed-up risk capital, allow you to take more risk and have higher returns.

Those cons -- those cons -- those efficient frontiers that Mercer put together tell the whole story. When you put constraints on or take them off, for any given level of risk, you can do better.

That -- that's my story, our story.

DR. BYRON WILLIAMS: Mr. Chair, thank you. Mr. Viola, there are some confidential slides that we suggest we move to now.

THE CHAIRPERSON: I'm wondering how are we going to do this? So we're going to have to go off tape, and we're going to have to come back for cross-examination. I -- I'm just wondering if we

shouldn't just conclude -- do the cross-examination, finish that, then go CSI, and you can go direct with Mr. Viola, and -- and we'll conclude that way.

DR. BYRON WILLIAMS: We could -- we could do that. It depends on Mr. -- My Learned Friend's cross-examination order in terms of -- but if the -- well, certainly, we -- we can work with that as well, Mr. Chair.

MR. STEVE SCARFONE: Whatever the Board prefers, Mr. Chair, I'm happy to do. I can do my cross now. I can defer it until after CSI. But I was just reminded by my co-counsel that we also have to squeeze in Mr. Johnston, who has some answers to Ms. McCandless's questions.

(BRIEF PAUSE)

THE CHAIRPERSON: Mr. Johnston, do you have the answers to the questions?

MR. LUKE JOHNSTON: That's as far as that goes? I do. They're -- I would just read them quickly if --

THE CHAIRPERSON: Yeah, if you could. Well, let's -- let's just deal with it right now, and --

MR. LUKE JOHNSTON: Okay.

(BRIEF PAUSE)

MR. LUKE JOHNSTON: If we -- if you could bring up Pre-ask 1, just so I can see the data.

(BRIEF PAUSE)

MR. LUKE JOHNSTON: And I believe it's the table with all the targets, towards the end of the question.

MS. KATHLEEN MCCANDLESS: I believe it's figure 7.

MR. LUKE JOHNSTON: Thanks.

(BRIEF PAUSE)

MR. LUKE JOHNSTON: Okay. So the first question was, Why are the PUB upper targets as a percentage basis higher than the dollar targets? The reason being is because we're performing the iterative methodology on MCT percentage targets, and those targets grow with the size of the business, whereas the dollar targets stay fixed, and we -- we don't need

as much to stay at a fixed 120 million, for example, if that's sufficient.

MS. KATHLEEN MCCANDLESS: Yes. Thank you.

MR. LUKE JOHNSTON: The second one -- question was in regards to the MPI lower target. Why is the naive number higher than the 50/50 number. And unfortunately, I'm told that -- that the naive, there appears to be a mistake in the -- in the calculation. Unfortunately, running that again takes some time, but an -- an estimate of what the correction would entail would be a target of approximately 140 million, and the MCT ratio of probably rounding up to 34 percent.

So yes, that's unfortunate that that number is not correct. But that said, I believe MPI's application is for 34 percent MCT, so our recommendation would be that MPI continues to support that -- that proposal. But that number would have to be corrected.

And again, we estimate it -- we estimate it at about 140 million, and approximately 34 percent.

MS. KATHLEEN MCCANDLESS: Thank you.

DR. BYRON WILLIAMS: And, Mr. Chair, we're happy to do either way, whi -- whichever the

Board decides. So either we can stay on the public record and complete our cross --

THE CHAIRPERSON: I think -- I think I'd rather stay on the public record and complete that. I -- I'm really concerned about the CSI, and I don't want to see us drifting in. If he's -- if Mr. Viola is dealing with CSI now, I -- I don't want to see an accident whereby we end up with CSI on the record.

So what I -- what I propose is, Mr. Scarfone, if you could start with the cross-exam, we'll finish the cross-examine in -- on the public record. Then we will shut it down, cut the livestream, and then we'll go separate -- with the separate record for -- to protect the CSI.

The other thing is, if we are going off and on, the livestream goes off and on, and we have to check it out and make sure we're off. So, Mr. Scarfone, if you could -- could start, please.

CROSS-EXAMINATION BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: Thank you, Mr. Chair. Kristen, could you pull up -- and I apologize. I didn't give you this one. It's CAC Exhibit number 5, which is Mr. Viola's CV.

(BRIEF PAUSE)

MR. STEVE SCARFONE: Mr. Viola, thank you for attending here today. Some preliminary questions about your qualifications and your work experience, beginning firstly, sir, with Cortex Applied Research.

That's your consulting company, I gather?

MR. VALTER VIOLA: It's not mine. I am an employee there, but I work closely with the principal there. I'm a managing director there.

MR. STEVE SCARFONE: Yes. I didn't mean yours in terms of ownership, but that's where you're --

MR. VALTER VIOLA: Yes. Yes. Yes.

MR. STEVE SCARFONE: And we see there, sir, that part of that your duties would be advising clients, including institutional investors on governance matters. Do you see that?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And what does governance in this context mean?

MR. VALTER VIOLA: Governance is board governance, roles and responsibilities of boards of

directors, trustees, investment committees, staff external advisors such as general consultants, risk consultants. We do fidu -- fiduciary education around that. Sometimes it creeps into things of this nature. So we've got an engagement right now that is addressing many of the same issues rela -- related to the liability benchmark portfolio, and how one defines risk, and how one prioritizes goals, for example.

MR. STEVE SCARFONE: I see.

MR. VALTER VIOLA: Broadly governance, but it's focused primarily -- our -- our business has evolved. I've been there two (2) years, but the business has been in operation for about twenty-five (25) years. It's probably the -- the single most recognized governance consulting practice in the US. A lot of our clients are US defined benefit pension plans, mostly on the West Coast.

We -- our roots are in Canada. We're based in Toronto, but we find the -- the Americans really appreciate the knowledge that Canadians bring to pension governance.

MR. STEVE SCARFONE: All right. Thank you. And so I see there as well that your investment advice and duties also include educating your clients on fiduciary matters, correct?

MR. VALTER VIOLA: The quick answer is yes, but my partner is more -- doing more of that work. I tend to do different aspects of that work.

MR. STEVE SCARFONE: Okay. But I expect you would understand the basic concept of the fiduciary duty that's owed to an investor --

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: -- by someone that is managing that investor's money?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And the fiduciary being the person to whom the money is entrusted, correct?

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: And sir, are you aware -- and for the lawyers in the room, they would be, that that fiduciary relationship is a -- is a special relationship that recognizes that one (1) of the parties in that relationship is in a vulnerable position, to the extent that they have entrusted their money to another?

MR. VALTER VIOLA: Right. Yes.

MR. STEVE SCARFONE: And so that -- that duty -- that fiduciary duty that's owed to that vulnerable person is -- is greater than the normal

duty of care. Is that your understanding?

MR. VALTER VIOLA: I can't disagree with that. I have no reason to arg -- yeah.

MR. STEVE SCARFONE: But at least you'd agree that part of that duty, if you would, sir, is -- is to always act on the advice and the instructions of the person that has entrusted the fiduciary with their money?

MR. VALTER VIOLA: Sorry, can you say that again, please?

MR. STEVE SCARFONE: Yes. The -- the -- part of that duty --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- would always include acting on the advice and the instructions of the person that has entrusted the fiduciary with his or her money?

MR. VALTER VIOLA: Well, I -- when you're saying "acting," that's not -- that's not compelling them to act. It's taking their advice into account?

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Yes. I -- I would agree with that.

MR. STEVE SCARFONE: And not acting

without their instructions?

MR. VALTER VIOLA: That would seem prudent to take that into account, yes.

MR. STEVE SCARFONE: And -- and so following up on that, the -- the investment firm -- the investment advis -- advisor, if you will, is not allowed to make investment decisions that are contrary to the advice received from the investor?

MR. VALTER VIOLA: Sorry, can we be more specific in terms of relating it -- I'm getting -- this is not my -- I'm not focused on fiduciary duties. That's my partner's --

MR. STEVE SCARFONE: No, and I'm -- I'm -- I've kind of moved away from that now. Just in a general sense, for -- for financial advisors, investment firms --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- it -- it's important --

MR. VALTER VIOLA: Correct.

MR. STEVE SCARFONE: -- that they don't act contrary to the advice received from the investor?

MR. VALTER VIOLA: As a -- as an advis -- as the client, you mean?

MR. STEVE SCARFONE: No, as -- as the person given the advice --

MR. VALTER VIOLA: Right, okay. The institutions?

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: It's important that they act -- they don't act contrary to the advice that they received from the investor?

MR. VALTER VIOLA: Of course. Of course. Yes, listen to your -- listen to your -- your client, yes.

MR. STEVE SCARFONE: Yes, or know your client --

MR. VALTER VIOLA: Know your client.

MR. STEVE SCARFONE: -- different vernacular.

MR. VALTER VIOLA: Sorry. Yeah.

MR. STEVE SCARFONE: The KYC form?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Yes. Yes. And so that, of course, sir, knowing your client would include purchasing securities outside of the investor-stated risk tolerance, correct?

MR. VALTER VIOLA: Correct.

MR. STEVE SCARFONE: And these important directions, sir --

MR. VALTER VIOLA: Well, can I qualify that?

MR. STEVE SCARFONE: Absolutely.

MR. VALTER VIOLA: So you say -- you -- you specifically said "specific securities and risk tolerance." And for me, specific securities and risk tolerance, again, just to clarify, risk, for me, tolerance is measured at the total fund level. Some people may not measure it that way. When we talk about individual securities, they have to be in the context of a total portfolio.

But it's hard to judge an individual's securities risk and appropriateness without knowing more about the rest of the portfolio. And I think I made the point in my slides that an individual security may look risky in isolation, but in the context of playing a team sport, it may not look as risky.

MR. STEVE SCARFONE: I understand.

MR. VALTER VIOLA: But I don't disagree that that factor would be taken into account as you -- if you want to repeat it, I'm happy to --

MR. STEVE SCARFONE: No. And it was

simply having you confirm that the investor stated risk tolerance --

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: -- is an important factor --

MR. VALTER VIOLA: For sure.

MR. STEVE SCARFONE: -- in deciding which investments to purchase --

MR. VALTER VIOLA: Correct.

MR. STEVE SCARFONE: -- for that investor?

MR. VALTER VIOLA: Correct.

MR. STEVE SCARFONE: Okay. And -- and we've canvassed this. Some investments -- investment firms call it the KYC, or the know your client --

MR. VALTER VIOLA: Yes. Sure.

MR. STEVE SCARFONE: -- form, and it helps set the roadmap, if you will, for that investor. Is that fair?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And then so moving down, I'm not going to go as far back to your Ontario teacher days, but while working with the CPP Investment Board, sir, that's the Canadian Pension Plan, correct?

MR. VALTER VIOLA: Canada Pension Plan.

MR. STEVE SCARFONE: Canada Pension Plan.

MR. VALTER VIOLA: Yes. Yes.

MR. STEVE SCARFONE: Part of your duties, I see, included investment portfolio design?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And this, I expect, would necessarily include advice to the CPP Investment Board on what the portfolio should contain?

MR. VALTER VIOLA: Absolutely. Asset allocation, and risk tolerance, risk appetite, all that kind of stuff. Yes.

MR. STEVE SCARFONE: And your duties also included, sir, managing investment risk for the CPP Investment Board, correct?

MR. VALTER VIOLA: Yes. I was the chief risk officer as vice -- executive vice president reporting directly to the CEO.

MR. STEVE SCARFONE: And this, I expect, sir, would necessarily include advice as it concerned the identified risk profile of the CPP Investment Board?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And am I right to say, sir, that this risk profile would include as its major component the risk tolerance of the CPP Investment Board?

MR. VALTER VIOLA: Yes, it would take that into account, yes.

MR. STEVE SCARFONE: And in fact, that would be its major component, would it not, of the risk profile?

MR. VALTER VIOLA: Sorry, component of what? Just --

MR. STEVE SCARFONE: Of the risk profile?

MR. VALTER VIOLA: The risk profile, that's a vague term. So I would define the risk profile as net exposure, assets and liabilities, yes. And so that profile has a profile. There is a characterization of it. It can be measured, and it's either high or low, and it has to be said in a way that takes into account the risk tolerance of the -- the stakeholders --

MR. STEVE SCARFONE: Of -- of the investors?

MR. VALTER VIOLA: -- being represented by the Board, yes.

MR. STEVE SCARFONE: Yes. And just scrolling up, after the CPP Investment Board, you were at Holland Park in Toronto, sir?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And again, advice to various institutional advisors?

MR. VALTER VIOLA: Advice to institutions, like smaller --

MR. STEVE SCARFONE: Or sorry, institutional investors, I'm sorry.

MR. VALTER VIOLA: Investors, correct.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Yes. So my clients were funds about this size. I was providing an outsourced risk measurement/management advisory function, so I would actually measure risks on their behalf and report them to some clients for mega funds.

Larger funds, they would engage me to give them advice on investment policies, risk policies, and the like, but they'd have their own staff and do their own measurement. They were engaging me just on advice in Canada and the US.

MR. STEVE SCARFONE: And so the advice to these various institutional investors, sir, that would again include managing their investment risk,

correct?

MR. VALTER VIOLA: Advising on their investment policies related to investment risk management, yes. And in some cases, we actually were outsourced to actually measure risks on their behalf.

MR. STEVE SCARFONE: Yes, and I see that, sir.

MR. VALTER VIOLA: I --

MR. STEVE SCARFONE: I use -- I use the language managing investment risk, but in the CV, it's -- it's described as investment risk governance?

MR. VALTER VIOLA: Which aspect -- governance as it relates to that Cortex? Yes.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Yes. Okay, gov -- in Cortex, we're just advising. I didn't provide an outsourced solution to actually measure it -- measure risks. I don't measure risks right now.

MR. STEVE SCARFONE: And again, developing investment/risk frameworks would include advice to your clients about what a portfolio might look like, given the client's risk tolerance. Is that fair?

MR. VALTER VIOLA: I would say that the framework was more literally defining, answering -

- I always defined a framework as answering five (5) key questions, the first being how you define risk? Is it assets versus liabilities or surplus? Is it beating benchmarks, or not being able to? So it's more conceptual.

And to be -- I would recommend those frameworks are institutionalized through adoption of investment policies. And the five (5) questions they answer are: How do you define risk, how do you limit it, how do you control it, that kind of stuff. How do you define the liability benchmark portfolio? That was the second one. So it's what we're talking about today.

MR. STEVE SCARFONE: Okay. So is -- I think that's a yes, that the --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- that the advice would include what the portfolio might look like, given the client's risk tolerance?

MR. VALTER VIOLA: Correct me if I'm wrong, are you talking about my scope of work at Holland Park, or just generally with --

MR. STEVE SCARFONE: No, we're still on Holland Park.

MR. VALTER VIOLA: At Holland Park, I

would -- I would not advise on asset allocation.

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: It was on policy on the framework or process to follow to ensure you had good governance and good measurement tools. But those funds typically had their own advisors. I was supplementing the general consultant with more specialized risk management background that I had.

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: So I wasn't telling them that they should have 60 percent in equities, or 40 percent. I was just giving them transparency on what the real risks were on the portfolio, and making sure they answered -- that I asked the right questions for them to answer, and coached them on better answers. So it was more advisory work.

MR. STEVE SCARFONE: And -- but in that advisory work, and I think you had indicated --

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: -- yes, that there would be a -- a consideration to the risk tolerance of the investor?

MR. VALTER VIOLA: Yes. That would be consideration.

MR. STEVE SCARFONE: And earlier in

this proceeding, Mr. Viola, we did hear from Mr. Makarchuk, of -- as you know, from Mercer, and his firm also provides institutional investment advice. At the outset of his evidence, he stated that not all investors are the same. Not every investor believes the same thing, invests the same way, or ends up with the same result. Would you agree with those -- those words?

MR. VALTER VIOLA: Yeah. Yes.

MR. STEVE SCARFONE: But he did say, and I -- I believe he might characterize this as his framework, that decisions are made for four (4) main reasons, in his view, one (1) of which is returns. Would you agree with that, that that's a -- that's a factor in each investment decision?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And more is better, I would expect?

MR. VALTER VIOLA: Absolutely.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Going north.

MR. STEVE SCARFONE: And a second -- a second reason he said that decisions are made is for risk? You'd agree with that?

MR. VALTER VIOLA: Yes. Yes.

MR. STEVE SCARFONE: And I would expect you to agree that low is better than high?

MR. VALTER VIOLA: That is correct.

MR. STEVE SCARFONE: The third factor he described is one of cost. He said cost is a factor in making investment decisions. Would you agree with that?

MR. VALTER VIOLA: Absolutely.

MR. STEVE SCARFONE: And again, cheaper is preferred over expensive?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And lastly, he said a factor that his clients always turn to is time, and the --

MR. VALTER VIOLA: I'm sorry?

MR. STEVE SCARFONE: -- time, or duration --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- how long an investment is going to be held?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And I think you described a scenario earlier today about T-bills, for example.

MR. VALTER VIOLA: Sure.

MR. STEVE SCARFONE: And so these four (4) factors -- could this, in your view, be a framework for an investor?

MR. VALTER VIOLA: Could they be a framework? Potentially yes. Those are the considerations, I would agree, that are factors, yes.

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: The other one that you didn't mention there might be -- when you say "risk," I'm assuming that's market risk? And --

MR. STEVE SCARFONE: He didn't specify, and if you're asking me, I can't comment.

MR. VALTER VIOLA: No, that's fine.

MR. STEVE SCARFONE: Yeah.

MR. VALTER VIOLA: I'm just -- there's different levels, different types of risk, but --

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: -- I'm trying to think -- we always go by FRICTO. That's the -- that's in the books. So flexibility, risk, income, control, timing, and other. So you've got the core ones, here. I can't -- I can't argue with any of them. They're all important.

MR. STEVE SCARFONE: Okay. Thank you. And so as it concerns the MPIC investment fund, having

reviewed the application, you'll be aware, sir, that a number of investment decisions have been made?

MR. VALTER VIOLA: Sure.

MR. STEVE SCARFONE: One (1) of which is a decision to segregate the co-mingled portfolio into what is described as buckets? You'll agree that that was an investment decision?

MR. VALTER VIOLA: Yes. Yes.

MR. STEVE SCARFONE: And there was also a decision made to de-risk the Basic claims liability portfolio? That, too, would be an investment decision?

MR. VALTER VIOLA: Correct, yes.

MR. STEVE SCARFONE: A decision was made, as we've heard, to lengthen the fixed income portfolio. That too, sir, would be an investment decision?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And a decision to diversify MPI's equity portfolio. That, too, would be an investment decision?

MR. VALTER VIOLA: Yes. And can I just ask a question? Sorry. When you say those are all investment decisions, as opposed to -- what's my other 'B', 'C', and 'D' choice? I don't -- like,

they're all investment decisions, sure.

MR. STEVE SCARFONE: That -- that's why I'm putting them to you.

MR. VALTER VIOLA: That's all good.

MR. STEVE SCARFONE: Yeah. And lastly, sir, there was a decision to reduce the Corporation's allocation to real estate.

That, I think you'll confirm, was an investment decision?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And these, sir, I would suggest to you, are the decisions made by an investor on the advice of firms like Holland Park and Mercer, correct?

MR. VALTER VIOLA: Taking those things into account, yes, among -- among other things, yes.

MR. STEVE SCARFONE: And I'm going to suggest to you as well, sir, that this advice that you provide to your clients in helping make these decisions, these aren't made in a vacuum, are they, sir?

MR. VALTER VIOLA: I would agree with that.

MR. STEVE SCARFONE: There is ongoing dialogue with the investor, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And there is in-person meetings?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And there's data sharing?

MR. VALTER VIOLA: Sure.

MR. STEVE SCARFONE: So for example, data to calculate the duration for matching purposes?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Data for interest rate sensitivity?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: In addition to the ongoing dialogue and the in-person meetings, sir, there is educational presentations, perhaps, by investment firms like Mercer and Holland?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And perhaps presentations on, for example, different asset classes and the merits of each asset class?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And a discussion is had on the investor's objectives.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Those are very important?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: A discussion is also had on certain assumptions that are made going forward, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: A discussion is had on risk measures?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Discussion is had on risk philosophies?

MR. VALTER VIOLA: Yes. It can me. Usu-- usually not, but yes.

MR. STEVE SCARFONE: And then following up on that, further decisions are made following the dialogue between the investor and the investment firm and advisor, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Decisions concerning investment return objectives?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Decisions concerning investment risk objectives?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And you're aware, sir, that these decisions that we've just described as it concerns MPIC, were not made once, but for each bucket under the newly segregated portfolio?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And one (1) of the decisions, as we've heard, that had to be made before selecting asset classes for the Basic claim liability portfolio, was whether to model the liabilities using a real liability benchmark versus using a nominal liability benchmark.

That too was an investment decision.

MR. VALTER VIOLA: I disagree.

MR. STEVE SCARFONE: Okay. You won't go with me on that one?

MR. VALTER VIOLA: That goes back to the framework, I would suggest. It's -- it's -- in my words, the liabilities are what they are, regardless of how you decide to take risk in relation to them.

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: So I think that's partially, I would argue, a governance question or a regulatory question or...

MR. STEVE SCARFONE: Well, let me put it this way to you then. Before the asset classes for

purchase can be decided upon --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- we need a liability benchmark selected. Is that true?

MR. VALTER VIOLA: Yes, if you're managing surplus, which MPI is doing, yes.

MR. STEVE SCARFONE: And again, that decision, which liability benchmark you want to go with, is made in cult -- consultation with the investor, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: It's not done unilaterally by the advisor?

MR. VALTER VIOLA: No. I think all decisions are not -- correct.

MR. STEVE SCARFONE: Right.

MR. VALTER VIOLA: Agreed.

MR. STEVE SCARFONE: And -- and would you agree with me, sir, that many of the decisions that we've just canvassed here come down to one (1) basic element and that is of investor's risk tolerance.

DR. BYRON WILLIAMS: Just for precision...

MR. VALTER VIOLA: Yeah.

DR. BYRON WILLIAMS: ...you've put a number of propositions to him. He's expressly disagreed with one (1), so you've use the word "many."

MR. STEVE SCARFONE: Yes.

DR. BYRON WILLIAMS: Are you asking him many or all --

CONTINUED BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: Yes, the majority -- the majority of the -- of the -- of the decisions that we've just canvassed with you, Mr. Viola --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- I would suggest to you come down to what is the investor's risk tolerance in making those decisions.

MR. VALTER VIOLA: Well, as -- as I go back through your list, you -- well, you started off with four (4) things. I said FRICTO, flexibility, risk, income control, timing and other. You mentioned return, risk, cost, time and I said those are all criteria to inform the decisions to invest one (1) way or another.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: But you're now asking me a specific question about risk.

MR. STEVE SCARFONE: Risk tolerance, correct.

MR. VALTER VIOLA: So reframe your question, if you will, because I think you're sort of -- you're asking me a question I can't answer because I'm not clear on what you're asking.

MR. STEVE SCARFONE: Okay, so --

MR. VALTER VIOLA: Risk is an important consideration.

MR. STEVE SCARFONE: It is.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Yes. And I would suggest to you perhaps that it's the single most important consideration when giving investment advice.

MR. VALTER VIOLA: Well, it's a very important one, but it's not the only one. We're not just trying to take risk off the table, we're trying to move northwest, so we want higher returns as well. We want to deploy our capital in a risk-adjusted efficient way.

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: So return and risk both need to be -- you can't talk about one (1) in isolation. So it's ---

MR. STEVE SCARFONE: Absolutely not.

And -- and the returns that you're forecasting will depend a lot on your risk tolerance, correct?

MR. VALTER VIOLA: Well, the returns I forecast don't depend on my risk tolerance, they depend on my forecast and the ways -- so, if you're talking about equities, for example, I may have a lower high tolerance for taking equity risk, but I'll have a forecast whether I think the S&P 500 is going to go up or down. And that doesn't really depend on whether I can tolerate being in it.

MR. STEVE SCARFONE: I see.

MR. VALTER VIOLA: So the -- I differentiate between an expectation for the market, the return expectation, the risk I might expect and the tolerance to pursue a strategy that takes returns and risks in those areas.

MR. STEVE SCARFONE: And I appreciate those comments. So the -- the risk tolerance that -- that you said is a -- is an important factor --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- is a decision that rests solely with the investor.

MR. VALTER VIOLA: Yes, it's their decision, absolutely.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Can I clarify one (1) thing?

MR. STEVE SCARFONE: Sure.

MR. VALTER VIOLA: If that's all right. When we talk about risk tolerance, the only thing I mentioned during the -- my presentation was the movement from right to left along that curve.

If you wanted to draw a graph of what risk tolerance looks like, those are indifference curves which weren't drawn. It would be -- being somewhere along the efficient frontier asking yourself is the slope of that line -- do I want to be here or there. And the risk tolerance really is how steep is that curve.

And when it's really steep I need a huge return for just a little bit more risk that says I'm really risk intolerant, and that's why you tend to be more to the left side of the risk spectrum.

MR. STEVE SCARFONE: Right.

MR. VALTER VIOLA: Whereas if it's flat, it says I could take this much risk as long as I get .3 percent more. That's why you end up being at the far right of that spectrum.

So the -- so the notion of indifference curves being indifferent, return risk, those curves

weren't included in any of my presentation, just for simplicity but...

MR. STEVE SCARFONE: Oh, so you're not speaking of the efficient frontier curves?

MR. VALTER VIOLA: The efficient -- the efficient frontier is what the opportunities you can get, the tolerance can't be answered.

Like, I can't -- you can't -- I can't say if somebody were to ask me where should we be along the efficient frontier, because it depends on the slope of the indifference curve, which I did not draw.

If the indifference curve is steep, you're going to be more to the left, because you need a huge return for a little bit more risk.

If you -- if they're flat, the tangent along the efficient frontier is to the far right and you'll take equity risk because you need -- you could take this much risk just if you get that extra 1 percent.

And it sounds like if -- if I had to describe it, MPI would have very steep indifference curves based on what they've indicated. They're steeper for the Basic and they're flatter for pension.

MR. STEVE SCARFONE: Pension.

MR. VALTER VIOLA: That's why they have more, that's how I would characterize it.

MR. STEVE SCARFONE: I think you just indicated earlier that you have, in fact, provided investment advice to institutional investors like MPIC, with the same number of assets under management.

MR. VALTER VIOLA: I have given them -- and again, it's -- it's more policy-driven on processes because I wasn't engaged to do asset liability studies for them through Holland Park nor -- nor today through Cortex.

The work -- sorry, ask your ques -- the work that I've done on this stuff is -- it was working with the pension funds act -- sorry, I'll ask -- I'll ask you to rephrase the question.

MR. STEVE SCARFONE: Sure. No, and the question wasn't a complicated one. It's really just to confirm that you provided investment advice, either in a governance role or otherwise to institutional investors like MPI.

MR. VALTER VIOLA: Investment advice -- when you say "investment advice," the decision-making process as distinct from what mixed to have 60/40. I would say that as a -- working at CPP Investment Board and Teachers, my job was to advise my

bosses, the Board, on asset classes, whether to be 60/40 or not.

But as an advisor, consultant, it was not specifically to -- like, I didn't undertake economic research to suggest equities were undervalued, for example.

MR. STEVE SCARFONE: Right.

MR. VALTER VIOLA: It was more on the process. The structures around that and the frameworks to use how one measured risk.

MR. STEVE SCARFONE: And you know what, you've kind of answered my next question, because the decision-makers for these institutions, I'm going to suggest, is either the Board of Directors --

MR. VALTER VIOLA: Correct.

MR. STEVE SCARFONE: -- or management, for example, the executive that are running the company, correct?

MR. VALTER VIOLA: Yes. Yes.

MR. STEVE SCARFONE: So to borrow from your hockey analogy, sir, one (1) important part of that that I think was missing would be the coach. The coach certainly has a role to play in a hockey game, correct?

MR. VALTER VIOLA: Absolutely, the coach plays a role.

MR. STEVE SCARFONE: And while employed with the CPP Investment Board you would've taken your instructions on portfolio design and investment risk management from a Board of Directors, correct?

MR. VALTER VIOLA: Ask the question again, sorry, taken my...?

MR. STEVE SCARFONE: Instructions.

MR. VALTER VIOLA: Instructions? They would set the parameters, but I was an advisor to the Board on -- you know, for example, discussions about risk tolerance. We had to define -- develop a framework, which I described briefly, on how we defined risk and how we measured risk and had discussions and dialogue, as I said, education with the Board.

MR. STEVE SCARFONE: Right.

MR. VALTER VIOLA: But ultimately they said yes, after hearing feedback from staff, including me as their chief risk officer, on asset classes that would bring them efficient frontiers that would say, if you have a high stomach for risk, having this mix of assets with this roast -- risk profile and return

expectation seems like what we would, as a management team, recommend. And the Board of course, through investment policy, would approve it just like an MPI.

MR. STEVE SCARFONE: Yes. And -- and don't get me wrong, I understand that there's this on -- back-and-forth dialogue.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: But ultimately, when I say instructions from the -- from the Board of Directors --

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: -- it goes back to the Board of Directors having the ultimate say --

MR. VALTER VIOLA: Yes, absolutely.

MR. STEVE SCARFONE: -- in what ultimately is selected for.

MR. VALTER VIOLA: Yes, correct.

MR. STEVE SCARFONE: And -- and again, I don't want to bog us down in the risk tolerance question again, but that would have included advice or instructions on the risk tolerance for investing the CPP monies.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And we heard evidence from Mr. Macarchuk earlier in this proceeding

that he had to get to know management and their perspective and what risks the Board of Directors would accept and -- and what they wouldn't.

That is similar to, I think, what you've described with your work with the CPP?

MR. VALTER VIOLA: Yes. But I want to clarify one (1) thing, if that's all right.

Just when we talk about risk, it's a -- we're generally talking about market risk. The risk of bad outcomes.

But one (1) of the things we haven't talked about is the attribution of risk, where it comes from. And so when we have these discussions about risk, there's an aggregate risk number, but it comes because you take inflation risk, credit risk, equity risk, et cetera.

If you ask -- so there is a dialogue that goes on with the types of risk that you're prepared to take that aggregate to a whole, and in this case, in the MPI file -- file for example, for example leverage was an issue that I didn't address, but clearly the Board was not comfortable with leverage, which is essentially borrowing money --

MR. STEVE SCARFONE: Money to invest, yes.

MR. VALTER VIOLA: So there's a more levered, more volatile outcome. And so they're not on for that source of risk that aggregates to the whole risk.

MR. STEVE SCARFONE: Yes. And I would suggest to you that, you know, having decided against leveraging --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- the Board of Directors would be in line with its selection of a low risk profile.

Would you agree with that? That's consistent with a -- with a low-risk tolerance.

MR. VALTER VIOLA: On the surface it would seem consistent, but I would argue that in the context of the material that I presented, any constraint shifts the curve.

And so this is why I said -- and Mercer even shows that, that leverage causes the curve to shift a little bit.

So while the intention is to -- the intention is to not take that type of risk because it seems inconsistent with risk tolerance, the model will suggest otherwise, that by having that constraint in place, you're worse off in a risk-adjusted.

So -- so that's why, you know, you rely on models you don't put 100 percent. But they're smarter than we are in terms of we tend to manage things as silos because it's easier to manage pieces.

The correlations that it -- between them is hard to manage. And so that's why when you talk about total fund risk, risks don't add. You know, this might be volatile in isolation, and this one is too, but it's the relationship, the correlation.

If this one, for example, leverage. What if I borrowed IBM to buy IBM. This one -- I shorted here in portfolio A and I go long portfolio B and C is the sum of the two (2). There's no exposure. Whatever I lose here, I make here.

So I'm just cautious about the ---

MR. STEVE SCARFONE: And I expect that it frustrates you to no end, and other advisors, that perhaps the modeling that you're speaking of doesn't fit with the perception of the investor, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And -- but ultimately, if an investor is -- is of the view that they just don't want to borrow money to invest in securities --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- that's their decision.

MR. VALTER VIOLA: Right. And as an advisor you just say that's fine. And here are the pros and cons of doing that. Yes, you can sleep at night because of that, but here's what the efficient frontiers suggest X.

MR. STEVE SCARFONE: Yes, you lay out the options --

MR. VALTER VIOLA: Absolutely.

MR. STEVE SCARFONE: -- let them make an informed decision, and then they decide, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And -- and I don't expect, sir, that you're in a position here today to challenge the Board of Directors for MPIC and the risk tolerance.

MR. VALTER VIOLA: No.

MR. STEVE SCARFONE: And -- and I'm going to suggest to you, sir, that that's in part because you didn't meet with the MPIC Board of Directors.

MR. VALTER VIOLA: In part, but there's other reasons too.

MR. STEVE SCARFONE: Yes. You didn't get to know their perspective, correct?

MR. VALTER VIOLA: No, I don't know their perspective.

MR. STEVE SCARFONE: You didn't have that important dialogue with them that's essential before providing investment advice, correct?

MR. VALTER VIOLA: Did not have the dialogue.

MR. STEVE SCARFONE: And -- but more importantly, as we've just canvassed, you're not in a position to challenge their risk tolerance because, again, that decision lies solely with the investors group -- or sorry, with the MPIC Board of Directors.

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: Are you aware, sir, that the -- the MPIC Board of Directors has an investment committee?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And you're aware, sir, that it's comprised of three (3) individuals from the investment industry, much like yourself?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And you're also not here to challenge the credentials of those three

(3) individuals, are you?

MR. VALTER VIOLA: No.

MR. STEVE SCARFONE: Kristen, could you find for me, please, investment Appendix 8. It's the investment committee terms of reference. Thank you. You can just stop there at the mandate.

I'll just give you an opportunity to -- to look at that, Mr. Viola.

(BRIEF PAUSE)

MR. STEVE SCARFONE: I'm going to paraphrase what we see before us in the mandate. The mandate has the strategies and policies of the Corporation's investment fund addressing the needs and objectives of both Manitoba Public Insurance and the Government of Manitoba.

Do you see that there, sir?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And scrolling down. Keep going, please. The role of the committee. Thank you.

You'll see there, sir, that the investment committee must recommend investment policies and strategies to the Board of Directors for

subsequent consideration by the Minister of Finance.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And that once these investment policies and strategies are approved by the Board of Directors and the Minister of Finance, the investment committee must ensure they're implemented.

Do you see that?

MR. VALTER VIOLA: If you could refer to the number. It don't -- it seems reasonable, but I ---

MR. STEVE SCARFONE: 4.14, I believe, and scroll down to the role of the department. So it -- that doesn't -- that accords with your understanding of how the governance structure would work?

MR. VALTER VIOLA: Sure.

MR. STEVE SCARFONE: And so I'm suggesting to you, sir, that this dynamic when government is -- is involved, and I expect that you experienced some of this with the Canadian Pension Plan and the Board, it complicates things somewhat to the extent that MPIC is a Crown corporation, meaning the Government also has some input in these decision-making processes.

MR. VALTER VIOLA: Well, the CPP was unique in their Crown corp. structure with the independence of the Board. I would argue that my experience with Canada Pension Plan was ve -- if you look at how they're set up, their -- the board members are independent of government and at arm's length is a big deal for them.

So this is -- this is not consistent with my experience with Canada Pension Plan investment, for example.

MR. STEVE SCARFONE: Okay, sir.

MR. VALTER VIOLA: But I'm not disagreeing that that -- this is not --

MR. STEVE SCARFONE: In place here?

MR. VALTER VIOLA: Yes, this is --

MR. STEVE SCARFONE: At least with the CPP then, this federal government had no real oversight over ---

MR. VALTER VIOLA: No, they were set up at arm's length and that's a -- and that model has been copied around the world in some places, as really good governance as an example, they -- they put that up as a -- anyways.

MR. STEVE SCARFONE: Yes. No, absolutely.

And having not had any dialogue with the -- with the Corporation and its Board, you're not in a position, Mr. Viola, to know the reasons why MPIC has a low risk tolerance.

MR. VALTER VIOLA: Well, I've read some stuff, I have some -- I've heard some rationale for it and I understand --

MR. STEVE SCARFONE: I'm reading the rate application.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Yes, yes, yes. So assuming that you read certain parts of it, you'll be aware, sir, that the Corporation suffered net income losses of $250 million between 2013 and 2017.

MR. VALTER VIOLA: I don't recall it, but I don't dispute it.

MR. STEVE SCARFONE: No reason to dispute that.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And of that $250 million, sir, 160 million was due to inaccurate interest rate forecasting. Any reason to dispute that?

DR. BYRON WILLIAMS: On the -- I'm not sure -- on this issue, I'm not sure this witness

should be accepting that as a factual -- as factually established.

We'll accept the first premise --

MR. STEVE SCARFONE: Yes.

DR. BYRON WILLIAMS: -- but I'm not sure the re -- record is conclusive on that.

MR. STEVE SCARFONE: Okay. It's in the rate stabilization reserve at chapter 4.2 if we need to turn to it.

DR. BYRON WILLIAMS: I know where the assertion is.

CONTINUED BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: Okay. And then we've also heard some evidence at this proceeding, sir, that the Basic program had transferred into it over the past four (4) years $214 million from the Corporation's other lines of business.

Do you recall reading that?

MR. VALTER VIOLA: I don't recall, no. And again, my area of focus is the portfolio design and its efficiency --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: -- rather than related activities, like reserves and the like.

MR. STEVE SCARFONE: No, no. And this is more towards the risk tolerance and the selection of a low risk tolerance --

MR. VALTER VIOLA: Sure, sure.

MR. STEVE SCARFONE: -- that the Corporation has made.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: So with that background information, sir, I'm going to suggest to you that selecting a low risk tolerance is not at all unreasonable in those circumstances.

Would you agree with that?

MR. VALTER VIOLA: Well, let me caveat my answer. You're asking me if it was unreasonable to base the low tolerance of risk based on what happened, and I would suggest that the tolerance for risk, because risk is a forward-looking thing, should be based on what one expects, not what happened yesterday.

That's what I would suggest. So I would argue that while some outcomes sound, on the surface, that they were adverse and informed perhaps tolerance for risk in the future because someone just suffered some pain, it's the expected future pain that is the most relevant thing for assessing risk

tolerance going forward.

We can learn from experience, but whether it was a good or bad experience is --

MR. STEVE SCARFONE: Irrelevant in your view?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Yes, but -- but notwithstanding those comments, and I appreciate that, the looking forward, it -- it's still the investors decision --

MR. VALTER VIOLA: Absolutely.

MR. STEVE SCARFONE: -- to decide on a risk tolerance.

MR. VALTER VIOLA: Absolutely.

MR. STEVE SCARFONE: And I'm going to suggest to you, sir, as well, you're aware that the -- the Basic claims liability portfolio has a head ratio of 100 percent against interest rate risk?

MR. VALTER VIOLA: That's the policy, yes.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: And -- sorry, yes. Against nominal interest rate risk, yes.

MR. STEVE SCARFONE: It's nominal, not real?

MR. VALTER VIOLA: Well, yes it's -- you -- just to be clear it's the way it's being managed in the way -- yes, implicit is the -- you're managing the nominal interest rate risk, yes.

MR. STEVE SCARFONE: And that -- that protection from interest rate risk moved from 85 percent to 100 percent under the new investment strategy?

MR. VALTER VIOLA: I don't disagree with that, yes. I know it's 100 percent, that's the new policy, yes, sir.

MR. STEVE SCARFONE: And -- and you're aware, Mr. Viola, that MPIC ---

MR. VALTER VIOLA: Certainly, yes.

MR. STEVE SCARFONE: You're aware, Mr. Viola, that MPI selected a portfolio that, as we've heard, was derived from a nominal liability benchmark?

MR. VALTER VIOLA: Yes, that's my understanding.

MR. STEVE SCARFONE: And that benchmark, I understand is one (1) that assumes inflation to be at 2 percent going forward?

MR. VALTER VIOLA: I'll have to be careful on how to answer that, because I think even in the Mercer submissions one (1) of the recent responses

is that they didn't -- while they have an assumption going forward that inflation is 2 percent -- sorry, your question is about the level of inflation.

I believe that embedded in all their capital market assumptions.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: So even in the return inequities, for example, there is an embedded inflation assumption and I believe it's 2 percent as a level on all asset classes, yes.

MR. STEVE SCARFONE: Per annum?

MR. VALTER VIOLA: Yes. That's my understanding.

MR. STEVE SCARFONE: And if I understood your presentation, I think you indicated this a couple times, you would've had MPI's liabilities assuming variable levels of inflation as part of their modeling, correct?

MR. VALTER VIOLA: Could you rephrase that, please?

MR. STEVE SCARFONE: Sure. Well I can't rephrase it, I can repeat it.

MR. VALTER VIOLA: Okay, sure. Please repeat it.

MR. STEVE SCARFONE: You would have

had MPI's liabilities assuming variable levels of inflation as part of the liability modeling.

MR. VALTER VIOLA: Yes, for the -- yes. And to be clear, I would suggest using the terms we had, the liability benchmark portfolio would consist of assets that reflected the inflation and real interest rate sensitivity of the liabilities, rather than the nominal interest rate sensitivity and liabilities.

MR. STEVE SCARFONE: And that, as I understand your evidence, is use of a real liability benchmark as a proxy.

MR. VALTER VIOLA: Well, that's one (1) component. It's -- if you look at the actual composition of the real liability benchmark in the case of Basic, it was 66 -- two-thirds (2/3s) of the asset, 66 percent were real, and then there were some T-bills, treasury bills, and some provincial long-term bonds, I believe, with a lower weight.

And then for the ba -- for the pension it had up to 81 percent, so it wasn't fully a hundred percent real return bonds.

MR. STEVE SCARFONE: But ultimately, MPIC, as you know, made use of a nominal liability benchmark --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- in deriving their portfolio.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And again, that's one (1) of those -- well, you disagreed with me on this point, but I -- I called that an investment decision. You'd quarrel with me on that.

MR. VALTER VIOLA: I didn't quarrel, I disagreed, yes. I suggested that -- yes, we -- we disagreed. I said that the cap -- I forget exactly how, but I -- yes.

MR. STEVE SCARFONE: Okay. But that -- that particular decision, whether it's an investment decision or a framework decision --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- that's one that's ultimately made by the investor after education.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: After in-person meetings.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: After consultation.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Dialogue with the investment firm advisor.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And you won't disagree that MPIC, based on what you've seen, had a clear investment objective that they wanted to hedge nominal risk rather than real risk.

MR. VALTER VIOLA: I see that.

MR. STEVE SCARFONE: Yes. And that, sir, I think you'd agree is a decision that belongs to MPIC, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: They, in other words, chose to accept inflation risk as a trade-off for the better asset classes available to them on the nominal risk side.

DR. BYRON WILLIAMS: Can I just, in terms of the question, sir --

MR. STEVE SCARFONE: Yes.

DR. BYRON WILLIAMS: -- are you referring to the liabilities benchmark or are you now moving from the liabilities benchmark to the optimization of the portfolio?

MR. STEVE SCARFONE: You mean the

selection of the asset classes?

DR. BYRON WILLIAMS: In term -- for the purposes of your question, yes.

MR. STEVE SCARFONE: Yes. No, I'm still on the -- on the benchmark.

MR. VALTER VIOLA: Yes. Sorry, if you could repeat your question, please.

CONTINUED BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: Yes. So we heard evidence from Mr. Macarchuk that before you can select -- and I think you agreed with this -- before you can select the asset classes --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- you've got to select the benchmark.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: All right. And so I'm suggesting to you that -- that the objective that the Corporation had was, firstly, wanting to hedge nominal risk rather than real risk, and thereby selecting the nominal liability benchmark.

Is that fair?

MR. VALTER VIOLA: That's what -- I -- my understanding is what they did, yes, and decided.

MR. STEVE SCARFONE: And in doing so, because I understand you could still purchase inflation protection under the nominal liability benchmark, is that -- is that true, sir?

MR. VALTER VIOLA: You could purchase inflation protection -- yes, you could.

MR. STEVE SCARFONE: You could have real return bonds under the nominal.

MR. VALTER VIOLA: You could, but if you put it in the model, it probably wouldn't like them very much.

MR. STEVE SCARFONE: It would fall off rather quickly, correct.

MR. VALTER VIOLA: It probably would put zero because it's got a lower return.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: And it's hedging a different risk.

MR. STEVE SCARFONE: Right.

MR. VALTER VIOLA: So I would be surprised if the model would like it at all.

MR. STEVE SCARFONE: So, in choosing to go with a nominal liability benchmark, the Corporation, I'm going to suggest to you, chose to accept some inflation risk as a trade-off for the

better asset classes that were available under the nominal pathway.

MR. VALTER VIOLA: Okay, so I want to be clear on the question.

Is your -- are you -- are you asking me whether the Corporation was prepared to take true inflation risk in the portfolio, or in the measurement of the risk?

MR. STEVE SCARFONE: In the portfolio itself.

MR. VALTER VIOLA: So the Board -- right, regardless of how they made their decision, they decided not to buy real return bonds and, therefore, they are taking inflation risk, yes.

MR. STEVE SCARFONE: Correct.

MR. VALTER VIOLA: That was a decision.

MR. STEVE SCARFONE: Yes. And just, you know, I don't -- I'm not going to engage you, sir, in a discussion on the merits of the different asset classes under the benchmarks, because I'll lose that every day.

But I do want to try and understand some very basic concepts.

MR. VALTER VIOLA: Sure.

MR. STEVE SCARFONE: The normal returns, as I understand it, are the total return an investor receives from an investment.

MR. VALTER VIOLA: Normal or nominal? Sorry.

MR. STEVE SCARFONE: Sorry, nominal returns, yes.

MR. VALTER VIOLA: So the nominal return. The nominal return on a bond, say?

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Is -- it's not adjust -- it's the return that we normally think of in -- in today's dollars. It's not -- you're not adjusting for the fact that inflation was X.

MR. STEVE SCARFONE: Right.

MR. VALTER VIOLA: So it's -- it's the return we normally think of.

MR. STEVE SCARFONE: So can I call it the "total return", or is that inaccurate?

MR. VALTER VIOLA: It could be potentially misleading, because -- I'm trying to think, you're talking about a particular asset?

I just don't want it to be confused with -- you can call it what you want.

MR. STEVE SCARFONE: Okay. No, I want

to get this correct, so.

MR. VALTER VIOLA: Yes, absolutely. A total return on that asset class is the nominal return, you could say the same, sure.

MR. STEVE SCARFONE: Okay, and the real returns then I think it follows, are the after inflation returns?

MR. VALTER VIOLA: Correct. And you're talking about returns as opposed to yields, yes, but -- yes.

MR. STEVE SCARFONE: And -- and so the Board, in deciding which way to go decided to hedge only nominal interest rate risk.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And by doing so, they chose to accept the lesser threat, in their view, of inflation volatility risk.

MR. VALTER VIOLA: I don't know how to answer that. That's what they said. I don't disagree with it.

MR. STEVE SCARFONE: Well, that's -- and that's why I prefaced it "in their view", you may not agree with that, but in their view at least they -- - they -- by doing so they chose to accept some inflation risk.

MR. VALTER VIOLA: They accept -- I don't disagree with that first part, I have a hard time understanding the second part.

So if you could say the whole thing again, I will suggest some language that maybe makes it clear.

MR. STEVE SCARFONE: My suggestion to you was that they decided to hedge only nominal interest rate risk.

MR. VALTER VIOLA: Right. Then I've read and you've said the lesser. I don't know what "the lesser" refers to. What is the other --

MR. STEVE SCARFONE: The lesser -- so they chose to accept the lesser threat of inflation volatility risk, meaning there were other factors or other benefits that they decided in favour of, rather than protect against rising inflation.

DR. BYRON WILLIAMS: Can I -- can I, just in terms of the question, sir?

MR. STEVE SCARFONE: Yes.

DR. BYRON WILLIAMS: Are you suggesting the question that inflation volatility is a lesser threat? I think that's the -- the cause of the confusion.

MR. STEVE SCARFONE: And I have

described it as such. The threat of inflation volatility.

CONTINUED BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: Because you indicated in your direct examination, right, it's not the level of inflation.

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: But it's the volatility that concerns you.

MR. VALTER VIOLA: I don't disagree -- right. But I've read both and I put it in the -- we can pull it up on the screen if you'd like, if that's okay.

MR. STEVE SCARFONE: Sure.

MR. VALTER VIOLA: Just to clarify the point. Both Mercer and MPI, if you could pull up my presentation, please.

I underlined it to -- to clarify this exact point. Let's see here. It's under the liability benchmark, so it will be slide -- it's the--

(BRIEF PAUSE)

MR. VALTER VIOLA: I apologize for the

delay.

DR. BYRON WILLIAMS: It's slide --

MR. VALTER VIOLA: It's slide 23. Please.

So slide 23 where it says -- sorry, I'm on the wrong one. Where it says Mercer and ---

DR. BYRON WILLIAMS: Slide 12.

MR. VALTER VIOLA: Thank you. It was early. Slide 12.

So the big simplification here and now I'm going to use the terms of "volatility" and "averages,: because I want it to be clear.

So MPI said -- and this is in the context of selecting the liability benchmark portfolio that you mentioned. They based their decision on a low risk assessment of inflation, primarily based upon the expected level.

So they didn't refer to the volatility, which is my point. And Mercer, in supporting the hed -- the decision to hedge nominal rather than real, in their words, was driven more by their views on the level rather than volatility.

I don't know if there's a so what behind that, because Mercer didn't elaborate, but I would suspect that if I were a consultant, I would be

telling my client to say the level is important, but the volatility is what factors into that equation about risk. The level doesn't factor into the equation, so it's the volatility that is really important.

And Mercer here is saying, our views are supportive of what MPI is doing, but it's driven based on their expectation, and ours too, that future inflation level won't be 9 percent inflation rather than volatility.

And again, from -- I could make another point, but...

CONTINUED BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: No, no. And so I -- I don't know if -- if the question as I put it to you, or if that changes the question as I put it to you, because as I understand it, your concern with the portfolio as selected is -- is about volatility.

MR. VALTER VIOLA: The liability benchmark portfolio is about the fact that inflation volatility is not exactly 0 percent.

MR. STEVE SCARFONE: Yes. And so my question to you was -- and perhaps the use of the word "threat" threw everyone, but MPIC chose --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- to accept some volatility risk.

MR. VALTER VIOLA: In inflation, yes, they did.

MR. STEVE SCARFONE: Yes. And in your view --

MR. VALTER VIOLA: Well, two (2) things, sorry. They accepted the fact that there is a mismeasurement, and they -- they decided in their portfolio design to accept the risk that the nominal bonds do have inflation risk in relation to liability, they do have some inflation exposure.

MR. STEVE SCARFONE: Yes. And -- and so long as -- I think you'll agree with me -- so long as they did so after sufficient education and made an informed decision, Mr. Viola, that is ultimately a decision, again, that lies with the investor, correct?

MR. VALTER VIOLA: And just to be clear, yes, the decision to do what, adopt the liability benchmark portfolio to hold only nominal bonds?

MR. STEVE SCARFONE: Correct.

MR. VALTER VIOLA: That is their decision. Yes.

MR. STEVE SCARFONE: Yes. And the decision not to protect the -- the Basic portfolio against rising inflation above 2 percent.

Again that's ---

MR. VALTER VIOLA: Right. That's -- that's their decision as well.

MR. STEVE SCARFONE: Yes. You might not agree with it, but that's their decision, correct?

MR. VALTER VIOLA: Correct.

THE CHAIRPERSON: Mr. Scarfone, I'm sorry to interrupt, but are you near a place where we could take a break for -- for a few minutes?

MR. STEVE SCARFONE: Yes.

THE CHAIRPERSON: If you are, we'll continue to that point. I don't want to disrupt it, but we should have a break at some point this afternoon.

MR. STEVE SCARFONE: I agree with you, Mr. Chair, and I think maybe, you know, this is as good a time as any.

THE CHAIRPERSON: Okay, so we'll -- we'll break for fifteen (15) minutes right now. Thank you.

--- Upon recessing at 3:05 p.m.

--- Upon resuming at 3:26 p.m.

THE CHAIRPERSON: Mr. Scarfone, sorry.

MR. STEVE SCARFONE: Sorry, Mr. Chair. I didn't see you sit down there. Thank you.

CONTINUED BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: So before the break, Mr. Viola was awkwardly trying to understand the concepts of -- of real return versus nominal returns, but I think if I understood your testimony from earlier today, the issue comes down to -- to this, and that is should MPIC -- should MPIC's liabilities have assumed variable levels of inflation as part of the liability modelling, that, I think, is the issue, you would say yes. Is that fair?

MR. VALTER VIOLA: Yes. The composition of the least -- that liability benchmark portfolio --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: -- which is how they modelled it, yes.

MR. STEVE SCARFONE: And -- and that protection, if -- if I can call it that, would come in the form of real return bonds, in -- in your --

MR. VALTER VIOLA: The bulk -- the bulk of the composition of the liability benchmark portfolio, under the real modelling, would consist 66 percent for the Basic of real return bonds, and 81 percent for pensions.

MR. STEVE SCARFONE: And -- and that, in your view, would adequately -- perhaps even more than adequately hedge MPIC against the -- the variation that might occur in the future on the inflation front?

MR. VALTER VIOLA: Well, that's Mercer's -- those are Mercer's numbers, not mine, but --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: -- I believe that their -- I have no reason to doubt that their development of that mix, I think, better reflects the true risks inherent in the liabilities compared to the one that was actually adopted.

MR. STEVE SCARFONE: Okay. Would you agree with me, though, Mr. Viola, that most investors accept inflation risk, and those that -- that do hedge inflation only hedge a portion of it?

MR. VALTER VIOLA: I -- I wouldn't disagree with that. You're talking about the -- on

the asset side, deciding -- you're talking about the actual investment activity as opposed to how they characterize the liabilities?

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Okay. Yes. A lot of people take inflation risk. I don't know what the mix is, but --

MR. STEVE SCARFONE: Okay. And -- and in your presentation, I don't know if I need to take you there, because --

MR. VALTER VIOLA: Well, sorry, but some funds, like Ontario Teachers, for example --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: -- they really do -- all they talk about is real interest rate risk and long-term inflation risk. So they are a leading -- they were the number 1 pension fund in the world globally. They're recognized as the thought leader. I happened to be there at a time, learning from very smart people.

Who knows what they do today, but back then, I think that's probably still manifested in a -- in a portfolio that includes a lot of these long-term real inflation-sensitive assets to hedge their risk that are real and long-term inflation sensitive. So

there is a very sophisticated investor that I think sets a standard.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: What other investors do --

MR. STEVE SCARFONE: You don't -- you can't speak to it.

MR. VALTER VIOLA: Well, the -- I know the average investor -- institutional investor probably worries a lot more about what the next -- the peer is doing than the nature of the liabilities, for example.

MR. STEVE SCARFONE: Now, but what -- but when you speak to the Teachers' Group --

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: -- those, as I understood from your presentation, that'S back in the day when the RRBs were offering 4 and 5 percent.

MR. VALTER VIOLA: Correct. But even today, when real interest rates are very low, they continue to have a significant -- like, one dollar ($1) in five (5), roughly --

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: -- I looked the other day at the annual report, and it's dated. It's

a year old. But they haven't gone to zero. They've got maybe 15, 16 percent still in real rate products, plus other inflation-sensitive. So it's not zero, and they have a lot of equity. So they have a high tolerance for risk, and yet they buy real return bonds as well.

MR. STEVE SCARFONE: And so it stands to reason with that equity and -- and they have more assets under management than MPIC does, obviously, they would be exposed to greater loss, relatively speaking, than MPIC would if inflation was to rise as you've suggested?

MR. VALTER VIOLA: Well, they have more assets, so they have more assets at risk. But proportionally, I would say that they have less inflation risk in managing their surplus than MPI does, because they have inflation backing assets, like, real estate and infrastructure.

MR. STEVE SCARFONE: Yes, like real -- they have real assets in their portfolio.

MR. VALTER VIOLA: Yeah, but they're proportionally much bigger, so they're going to have bigger absolute -- bigger absolute adverse outcomes when those adverse outcomes happen.

But from an inflation perspective,

there'll be less. They won't be as hurt as badly.

MR. STEVE SCARFONE: Yeah, well, be -- because of the real assets that they have in the portfolio?

MR. VALTER VIOLA: Yeah. Yeah. Including real return bonds, yeah.

MR. STEVE SCARFONE: Okay. Slide 21 of Mr. Viola's presentation. So here's the -- the Teachers, showing 19 percent in real rate products.

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: Does that, I expect, sir, include real estate and infrastructure?

MR. VALTER VIOLA: No. No.

MR. STEVE SCARFONE: No.

MR. VALTER VIOLA: So the green -- on the slide, it shows up. The -- you'll see the green on the top right in the legend at the bottom.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: That's real rate products. So that's 90 percent. The yellow is real estate, and eyeballing it, looks like it's smaller than the real rates.

MR. STEVE SCARFONE: Oh, I see your key down there, sorry.

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: That -- my apologies.

MR. VALTER VIOLA: That's okay. That's okay. And infrastructure's above that.

MR. STEVE SCARFONE: I see. So the 19 percent real rate products, that -- that's all real return bonds? Is that correct?

MR. VALTER VIOLA: I believe so. And it's probably got some US treasury inflation linked product as well, not just Canada.

MR. STEVE SCARFONE: And that -- that, as I see, sir, was from 2015. Do we know if that allocation still exists today?

MR. VALTER VIOLA: It's not materially different. They're not at zero. They've gone down a little bit, but I looked the other day, and they've reclassified things. So they've got -- they've actually got an explicit line item now called -- do you have the paper? They actually have a new line item called inflation hedge. So they've got 9 billion, and in prior years, they didn't have that.

What that consists of, I don't know, but they break out real rate products and include it under real estate, real assets, and fixed income. So they're -- the punchline is they've still got a lot of

real rate products, but they may classify it little differently.

MR. STEVE SCARFONE: Okay. I -- I see. So real rate products could include something other than real return bonds, then. Is that fair?

MR. VALTER VIOLA: For this number, I'm pretty sure it's most -- it wouldn't be materially different from -- I can check it, but it's basically Canadian provincial private sector, like the four seven (47), which I -- was in my portfolio back then, and they probably still have that, plus some US Treasury inflation and products. So I'm -- I am pretty sure they're all bonds.

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: If -- if not -- not materially different from that.

MR. STEVE SCARFONE: So my understanding is that -- that the Teachers Group has approximately $185 billion to manage? Does that sounds about right?

MR. VALTER VIOLA: Yeah, about two hundred (200), yes.

MR. STEVE SCARFONE: Two hundred (200)?

MR. VALTER VIOLA: Something like

that.

MR. STEVE SCARFONE: Would it -- would it surprise you to learn that today, they have just $1.5 billion in real return bonds?

MR. VALTER VIOLA: Would it surprise me if that's what they have today?

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: It probably would.

MR. STEVE SCARFONE: But we don't know what they have today?

MR. VALTER VIOLA: Well, as I said, they only publish an annual report once a year. They do have a semiannual. I haven't looked at it, but it would -- I'd be surprised if they were anywhere close to that. But again, when you look at any asset class, it depends on their outlook, right?

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: So -- and without all the other things that are going on there.

MR. STEVE SCARFONE: So when you indicated earlier in your recommendation, sir, at the last page of your presentation, that the -- number 1 on your list would be the understatement of long -- of long-term risk of inflation and real interest rates.

Do you see that?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: But you'd agree with me, sir, that inflation is, in fact, covered up to 2 percent in the MPIC Basic claims liability portfolio?

MR. VALTER VIOLA: I'm not sure how to interpret that. When you say it's covered --

MR. STEVE SCARFONE: It's -- it -- there's protection up to 2 percent. So it -- to the extent that inflation doesn't --

MR. VALTER VIOLA: Right. Right.

MR. STEVE SCARFONE: -- and -- and the nominal interest rate risk is -- is covered as well. I know you don't like that word, but --

MR. VALTER VIOLA: No, no. That's fine. No. So it's -- the -- quick -- the -- you're -- you're suggesting that the liabilities aren't perfectly sensitive to a hundred percent of the change in the CPI?

MR. STEVE SCARFONE: Correct.

MR. VALTER VIOLA: Yeah. I'm not disagreeing with that.

MR. STEVE SCARFONE: Okay. Would you agree, Mr. Viola, that in general, real return bonds are relatively expensive compared to the best estimate

expectations of inflation?

MR. VALTER VIOLA: I -- I would not make that conclusion.

MR. STEVE SCARFONE: Okay. Would you agree that most investors --

MR. VALTER VIOLA: In fact, I would -- in fact, I would -- I would argue that they represent fair value relative to the relevant alternative. Mercer and MPI, one (1) or both, talked about a break-even inflation rate, not a term I use, but when -- when I see break-even inflation of something south of two (2), that means that if you actually get inflation of two (2), which is what the Bank of Canada assumes, you're actually doing better by buying the real return bonds, as I understand their definition of break-even.

So while it's not turning 4 percent or 5 percent real, it's the spread between nominal that matters, and the break-even tells you that issue. And it -- to me it looks like it's not a huge cost for taking risk off the table and taking it elsewhere, and getting better returns.

MR. STEVE SCARFONE: And would you agree with me that matching duration with real return bonds is -- is challenging?

MR. VALTER VIOLA: Relative to the

liabilities, it's harder than nominal bonds, but yes. But that's not the only part of --

MR. STEVE SCARFONE: The --

MR. VALTER VIOLA: -- interest rate risk. Yeah.

MR. STEVE SCARFONE: Real ret -- return bonds, sir, I'm going to suggest to you, haven't increased in price, even with the higher inflation over this past summer.

Would you agree with that?

MR. VALTER VIOLA: I wouldn't dispute it.

MR. STEVE SCARFONE: Okay. And so we see that inflation rose to a high of, I think, 3 percent this past year in the summertime?

MR. VALTER VIOLA: Yeah.

MR. STEVE SCARFONE: And it's now decreased again to two point two (2.2), I believe, after September, correct?

MR. VALTER VIOLA: I don't dispute that.

MR. STEVE SCARFONE: How about the market for real return bonds? Are they generally available out there for investors to purchase?

MR. VALTER VIOLA: As I said in -- in

the response to the Utility Board's -- Public Utility Board's questions, it's about an $85 billion market. So it's -- it's big, but it's not massive. It's not -- it's much smaller than the nominal bond.

But I'm not a fixed-income expert. All I know is that a fund like Teachers, you know, they managed to acquire the product, and they're a big fund, so for a smaller fund, it's more. A couple billion dollars is not small, but it's not 200 billion. It's -- it's not a -- it's not a -- an insurmountable task.

MR. STEVE SCARFONE: We heard evidence from Mr. Makarchuk that had MPIC wanted to completely hedge inflation risk beyond the -- the nominal part that they did, the expected returns on the portfolio -- the Basic portfolio would have been materially lower. Do you agree with that?

MR. VALTER VIOLA: I -- I don't know what he said, but I would -- the Mercer studies would suggest that investing in real return bonds would improve for all levels of risk, the expected return. So not sure what he said, but the analysis would suggest otherwise. By putting a constraint on real return bonds, it -- it costs you money in the context of a total portfolio and rebalancing everything.

MR. STEVE SCARFONE: Yes, and -- and that was the key point, I think, the rebalancing everything. Because if we pull up slide 36 to your deck, it shows here a slide that was, in fact, taken from the Mercer presentation, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And this shows, as I understand it, the difference between a portfolio that contains real return bonds and one that does not. Is that fair?

MR. VALTER VIOLA: There's several lines, but my understanding, again, the -- it's very -- it's hard to read, but the bottom one, I believe, is the -- call it a brown.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: That one is the constrained portfolio, so it does not include real return bonds.

MR. STEVE SCARFONE: Correct. And the one above it --

MR. VALTER VIOLA: And the one at the highest --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: -- I believe has whatever -- remember -- sorry, not remember -- Mercer

went through an exercise --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: I don't have access the model, so I only worked with the reports that were given --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: -- so I'm sort of reverse engineering and making conclusions based on what was given -- provided. That top graph, I can't remember what is in it exactly other than the next step going from the top to the bottom is this constraint of the real return bonds.

So that difference is -- is taking out real return bonds, so making the return go lower because of the constraint --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: -- and I don't know what the compositions are of those two (2) portfolios, but to me -- and again, you have to make a ref -- a judgment. If you were to go left -- I -- I picked the ones that were easy to read, and I said, If you maintained the current level of risk -- and this is forward-looking.

So this is -- this is Mercer's projected stuff, saying if -- taking your current

level of risk, if you took their advice, i.e., the upper efficient frontier as based on their analysis, whatever's in that bucket, and then you set whatever's in that mix, and you said, you can't have any real return bonds, the cost of taking real return bonds out at that level is .8 percent return deterioration per year as a result of that.

And again, along all these curves, and when you shift up the curve, you've got lots of changes in the portfolio. There might be -- you know, when you take real return bonds out, maybe it'll try to put some real estate in, because it wants an inflation protection.

MR. STEVE SCARFONE: Well, and -- and that, I think, was leading to my next question, because during the course of your presentation and while explaining this particular slide, you said that the key point here is that it includes real return bonds.

And so we see that -- that basis point move in favour of the portfolio that contains real return bonds, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: But it would be important, I think another key point for sure, to know

what other asset classes might be contained within that efficient frontier, would you agree with that?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And -- and to the extent that that efficient frontier that we're looking at that has the real return bond frontier outperforming the current one, that is the one (1) with no real return bonds --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- if it had in it private debt, private equity and some diversified growth funds, that might impact upon performance as well, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And so having real return bonds alone, in that particular portfolio, may not fully account for the 80 basis point increase.

MR. VALTER VIOLA: Well, again, this is the correlation effect. So, this is why you have to do it in aggregate. It's why -- again, try to think of the hockey analogy, but the punch-line is, you know, Mercer does this for a living, and this is the way I would do it as well is, you have to sort of say with and without what is the effect on the total portfolio.

We can't look at things in isolation, and the fact of the matter is, and Mercer would repeat it in a different way, but it's the same conclusion.

By taking return -- RRBs out along any point along this makes you worse off. In fact, when you go further to the left, you will note that the curve really drops off a cliff, and that's maybe the more important point.

At lower levels of risk tolerance, as you move to the left, the difference between the top efficient one and the constrained one below actually becomes much bigger.

So this is why I'm particularly concerned with the absence of real return bonds because I believe they very well protect against the risk of long-term inflation and real interest rates, and given the lower tolerance for risk, as I defined by the decision to be to the left part of the risk spectrum, if you look at that vertical distance, it becomes a bigger opportunity cost by not investing in real return bonds the further left you go.

And so that's -- that's really the nature of the biggest concern I have with this. It wouldn't be such a big difference if you look out far -- far out and said, This fund can take a lot of risk

and -- invested, and it can tolerate the risk of equities.

There the cost of not having real return bonds is very small, because you wouldn't invest in them because you're not worried about those risks. But at the lower level of risk that you're wanting to accept, that movement along there, that cliff drops off on that brown curve.

MR. STEVE SCARFONE: But to the extent, Mr. Viola, that that -- that purple frontier line --

MR. VALTER VIOLA: The top one?

MR. STEVE SCARFONE: Yes, contains assets that were excluded, then --

MR. VALTER VIOLA: That were excluded ultimately, yes.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: So you could do the same analysis and say it's not .8 percent, it's something else. But those other curves, it's still -- it's still a cost relative to some other less constrained one that would have real return bonds. So absolutely.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: And in fact, you

could put this -- and I can't remember if the -- the hedge -- the leverage constraint was in or not in this.

So we can argue about whether it's 80 basis points or 20 or 40. The point is, it's always lower.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: By putting a constraint of not having RRBs in it.

MR. STEVE SCARFONE: Yes. And that exactly was my point, because if you go to Exhibit 15, MPI Exhibit 15, we see there that that proposition on -- it would be page 5, that proposition that -- that purple frontier line included --

MR. VALTER VIOLA: Sorry, is this the right exhibit we're supposed to be looking at?

MR. STEVE SCARFONE: Yes, yes.

MR. VALTER VIOLA: Where am I looking?

MR. STEVE SCARFONE: There's the proposal by Mercer, you see in the red?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Yes, and so the purple line that they -- that they indicated there which was the -- the efficient frontier, the one that you said outperformed the current asset mix, included

some excluded assets.

MR. VALTER VIOLA: Okay.

MR. STEVE SCARFONE: So it -- you'll see there that listed there are private equity. Do you see that?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: That was not an asset class that MPIC was prepared to -- to purchase.

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: Growth fixed income, that -- that as well was included.

MR. VALTER VIOLA: Sure.

MR. STEVE SCARFONE: And in addition to that, a private debt, as we've heard.

MR. VALTER VIOLA: Right. And I could have drawn the cost relative to one of the other curves, I just picked the one that was the easiest one to -- again, less constrained.

MR. STEVE SCARFONE: So that 80 basis point out performance, if I can, might be lower.

MR. VALTER VIOLA: Right. Some of it will come from the other constr -- I shouldn't say it.

Well, sorry, the 80 basis points would be lower for a more constrained portfolio that was illustrated by Mercer.

MR. STEVE SCARFONE: Yes. And -- and again, as we canvassed before the break, these investment decisions whether to include private debt, to growth fix, these are decisions ultimately --

MR. VALTER VIOLA: Sure.

MR. STEVE SCARFONE: -- that lie with the investor, correct?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And that's based again on the risk tolerance.

MR. VALTER VIOLA: In part, yes.

MR. STEVE SCARFONE: Rightly or wrongly, the investor can decide that.

And so we -- we heard some evidence earlier anecdotically private debt just wasn't something the Board of Directors was comfortable with, that may frustrate the advisor --

MR. VALTER VIOLA: No, no, that's all great. I can't disagree with that.

I will note that .8 percent is a big number, but when we're compounding over decades, even .2 percent is a big number.

So we can question that magnitude, whether it's 80 basis points, 20 or 30, it's kind of like a free lunch, being inefficient below the

frontier is -- it costs you something. We -- we can debate how big it is. But...

MR. STEVE SCARFONE: So the purchase of real return bonds in the -- in the Basic claims liability portfolio is one -- is -- is something that you've suggested or recommended occur.

But, as I understand it, that would only properly be included to hedge against rising inflation, is that fair?

MR. VALTER VIOLA: Sorry, can you repeat that, is it relating to the actual portfolio or the bench portfolio?

MR. STEVE SCARFONE: The actual portfolio.

MR. VALTER VIOLA: Can you rephrase the question, sorry?

DR. BYRON WILLIAMS: Yeah, because the question was actually -- was speaking about purchasing real return bonds for the liability portfolio. And that's not -- I -- so are you talking about the liabilities portfolio?

MR. STEVE SCARFONE: The Basic claims liability portfolio.

MR. VALTER VIOLA: So can you rephrase the question, sorry.

CONTINUED BY MR. STEVE SCARFONE:

MR. STEVE SCARFONE: So one (1) of the recommendations, or I think you'd agree with me that you would have the Basic claims liabilities portfolio includes some allocation to real return bonds?

MR. VALTER VIOLA: Yes, yes. It -- well, 66 percent. This is what Mercer says. They said 66 and 81 percent would be in the pension, yes.

MR. STEVE SCARFONE: Yes. And the -- the return on that investment is -- is more beneficial to the investor if inflation rises.

MR. VALTER VIOLA: Sorry, now we're talking about investing as opposed to the liability benchmark.

MR. STEVE SCARFONE: Yes, and I may be confusing the two (2) concepts but --

MR. VALTER VIOLA: No, that's okay.

Now we're talking about the portfolio, not the liability benchmark.

MR. STEVE SCARFONE: No, we're not.

MR. VALTER VIOLA: We're talking about the liability benchmark.

MR. STEVE SCARFONE: We're talking about the Basic claims liability portfolio.

So, the portfolio that has investments

to match against MPIC's obligations under Basic.

MR. VALTER VIOLA: Okay.

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: You would have that part -- portfolio include real return bonds.

MR. VALTER VIOLA: Mercer has suggested that that best characterizes the liabilities, and I don't know the portfolio -- the liability char -- characteristics under -- a hundred percent. But Mercer has said that --

MR. STEVE SCARFONE: I see.

MR. VALTER VIOLA: 66 percent --

MR. STEVE SCARFONE: You want to stay on the benchmarking, on the -- the liability, the real liability port -- benchmark portfolio, is that where I'm losing you?

MR. VALTER VIOLA: No, I'm trying to figure out -- I -- I apologize. It's -- I thought your question was -- is your question that the liability benchmark portfolio for Basic should include 66 percent real return bonds?

MR. STEVE SCARFONE: No, I haven't indicated a percentage, just that right now --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- the -- the asset classes don't include real return bonds.

MR. VALTER VIOLA: In the liability benchmark portfolio?

MR. STEVE SCARFONE: No, in the Basic claim -- in the actual portfolio.

MR. VALTER VIOLA: You're talking about the portfolio. Sorry. In the Basic bucket for --

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Sorry. They don't include a nominal fixed-income. I apologize. Yes. Sorry.

MR. STEVE SCARFONE: No, it's probably my question.

MR. VALTER VIOLA: No, because we haven't -- you're correct in defining individual portfolios, there's five (5) of them to manage.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: Now we're talking about portfolios.

MR. STEVE SCARFONE: Yes, and I'm talking about the Basic claims liability por -- the one that -- that -- that is designed to meet the obligations of the --

MR. VALTER VIOLA: Of the Basic liability.

MR. STEVE SCARFONE: The Basic program.

MR. VALTER VIOLA: We're talking about the assets now, not the liability.

MR. STEVE SCARFONE: Yes. The assets. Yes. Thank you.

MR. VALTER VIOLA: Does not have real return bonds in it.

MR. STEVE SCARFONE: Correct.

So, if the portfolio, the Basic claims liability portfolio contained real return bonds --

MR. VALTER VIOLA: Let's call it the Basic portfolio, because as soon as you say liability portfolio I'm talking -- you're talking about the right side of the balance sheet.

MR. STEVE SCARFONE: Right.

MR. VALTER VIOLA: And we're talking about the left side. The assets.

MR. STEVE SCARFONE: Yes, yes, yes.

MR. VALTER VIOLA: Okay, left side of the balance sheet we're talking about.

MR. STEVE SCARFONE: Okay, and we are, we're talking about the assets --

MR. VALTER VIOLA: I just want to be clear.

MR. STEVE SCARFONE: -- in the Basic portfolio.

MR. VALTER VIOLA: Got it.

MR. STEVE SCARFONE: Yes. So those assets, sir, if they included real return bonds --

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: -- they would offer some protection against long-term rising inflation.

MR. VALTER VIOLA: And decline -- yes, unexpected inflation and declining real interest rates. Yes.

MR. STEVE SCARFONE: Yes. And if we look to investments 14.2.1, Kristen.

This, as part of the rate application, Mr. Viola, that sets out the interest or the inflation forecasts over the next few years.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And you'll see that -- that the forecast for Canadian CPI is at 2.2 percent. Do you see that in the far right column?

MR. VALTER VIOLA: For 2018. Yes.

MR. STEVE SCARFONE: 2018. Yes.

And for 2019, 2.1 percent?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And for the next year, 2 percent and thereafter, do you see that?

MR. VALTER VIOLA: Yes. These are, just to be clear, these are averages, not volatilities.

MR. STEVE SCARFONE: Correct. And if we go to DCAT, figure 66, please. And these levels, again, not volatility, are historical inflation numbers that we see a significant difference in the two (2) time periods there.

One between 1915 and 1991, do you see that, sir?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And again between 1992 and 2015, the mean at 1.8 percent. Do you see that?

MR. VALTER VIOLA: Yes. And those are consistent with materials I presented, line 2 with the time horizon since real return bonds had been issued.

MR. STEVE SCARFONE: Yes. And so I think you'll agree with me that from 1992 forward the -- the mean level has been below 2 percent.

MR. VALTER VIOLA: I can't disagree

with that.

MR. STEVE SCARFONE: And would you also agree that in order to accurately forecast inflation, either tomorrow or in the long-term, it -- it might be important to look at the historical data?

MR. VALTER VIOLA: I'm not disagreeing, but there's other things I would look at as well.

MR. STEVE SCARFONE: Okay.

MR. VALTER VIOLA: Forward-looking, not backward-looking.

MR. STEVE SCARFONE: But backward-looking would be one (1) consideration that a prudent investor should -- should turn to, correct?

MR. VALTER VIOLA: Yes, but taking into account the circumstances back then. Yes. And how they might be different.

Can I elaborate, for example? No?

MR. STEVE SCARFONE: Sure. No, no --

MR. VALTER VIOLA: I'm just saying as an example, equity returns in the future may be lower because there's better ability to diversify equity risk today than back in the '0s.

MR. STEVE SCARFONE: Yes.

MR. VALTER VIOLA: You can buy a

basket of stocks at 500 with the click of a button. Before you had to buy them piecemeal and there were only thirty (30) of them you could buy. Industrials and banks, for examples.

MR. STEVE SCARFONE: So history doesn't help --

MR. VALTER VIOLA: The world changes.

MR. STEVE SCARFONE: Yes, the world has changed.

MR. VALTER VIOLA: Absolutely.

MR. STEVE SCARFONE: So -- but in addition to the historical data, you might also look to what the Bank of Canada is forecasting into the future.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: That might be another factor that one would consider.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And if we look to MPI Exhibit Number 18, please, Kristen. And it would be all the way to the bottom at page 25.

And this, sir, was a question that was put to you by Manitoba Public Insurance asking that you elaborate or -- or provide your thoughts on inflation expectations. Do you recall this question?

MR. VALTER VIOLA: There were a lot of questions. I don't dispute it. Yes, I remember it.

MR. STEVE SCARFONE: Okay, and if you could scroll down to Mr. Viola's response, please.

And you'll see there, sir, that you don't have what you've described as a view --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- unexpected inflation or even inflation volatility per se --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- but you're just making a general observation that investors should have less confidence about their inflation forecast the further out we go.

Is that fair?

MR. VALTER VIOLA: Yep. Yes.

MR. STEVE SCARFONE: Okay. And you don't have any evidence or you haven't presented anything that would refute the Bank of Canada forecasts that inflation over the next few years will be contained to within 2 percent?

MR. VALTER VIOLA: I don't have any challenge to their view or ability to do that over a short horizon, no.

MR. STEVE SCARFONE: And you'll also

agree with me, sir, that the Bank of Canada uses interest rate hikes as a -- as an effective tool at keeping inflation low.

MR. VALTER VIOLA: That's one (1) of the tools -- one (1) of the few tools, I guess, they have. But there's a lot of things that impact inflation. I'm not an economist, so.

MR. STEVE SCARFONE: No.

MR. VALTER VIOLA: I'm just...

MR. STEVE SCARFONE: But you're able -- you're able to agree, I think, that the Bank of Canada is able to effectively manage inflation.

MR. VALTER VIOLA: Well, historically they've done -- and again, I don't know how, I'm not a monetarist, policy guy, I'm not an economist, but the reality is to the extent that they've influenced it, they can get a pat on the back for saying they stuck to the 2 percent target plus or minus a little bit, so.

MR. STEVE SCARFONE: And in that comment that you make there, Mr. Viola, that you would suggest that investors should have less confidence about their inflation forecast the father out they go.

That, I expect, is advice that is sometimes heeded by investors, correct?

MR. VALTER VIOLA: I would hope so.

MR. STEVE SCARFONE: Like the Teacher's group, for example.

MR. VALTER VIOLA: Yes, that's why they buy real return bonds.

MR. STEVE SCARFONE: And again, that's advice that sometimes isn't heeded by the investor, correct?

MR. VALTER VIOLA: I'm not disagreeing.

MR. STEVE SCARFONE: And ultimately, again, I know we've gone over this, that final decision rests with the investor, correct?

MR. VALTER VIOLA: Correct.

MR. STEVE SCARFONE: And so long as the investors made an educated and informed decision not to hedge long-term inflation, that really nothing more need be said on that issue?

MR. VALTER VIOLA: The investment decision, as long as it's informed, and the risks are transparent and the outcomes are described and reasonable, then it's their money, they can do what they want.

And -- but the issue is are they taking into account fully all the risks that need to be taken

into account, yes.

MR. STEVE SCARFONE: Kristen, could you, please, pull up investments Appendix 12, please.

(BRIEF PAUSE)

MR. STEVE SCARFONE: This, Mr. Viola, is -- is the ALM study that Mercer prepared.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: If we can turn to page 16, please. And scroll down. I'm looking for the projected cash flow chart to -- keep going, it might be the other 16. I see two 16s there, or two (2) numbers. Yes, that's the one. Thank you.

So, Mr. Viola, as I understand the matching that occurs in a study like this, there -- the Mercer group is trying to match MPIC's obligations to the assets that it purchases in its portfolio.

Is that too simple an explanation?

MR. VALTER VIOLA: No, that's --

MR. STEVE SCARFONE: That's fair? And so we see here that MPIC, and again, this is it's -- you'll see in the preamble above the -- above the chart that it's for claim payment. So this is the Basic claims portfolio.

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: That -- the liabilities are heavily front end -- or heavy in the front end. Do you see that?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Three hundred million. And they decrease quite dramatically after the first bar, before increasing again at the very end outside about forty (40) years from now.

Do you see that?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And are you familiar, Mr. Viola, with the obligations that the Basic claims liability portfolio has?

MR. VALTER VIOLA: I have a basic understanding of the Basic liabilities, yes.

MR. STEVE SCARFONE: Okay. You're aware that at the front end at least some of the liabilities would include, you know, replacing cars, fixing cars that are in accidents?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: And also repairing the occupants of the people in those cars when they're in an accident on the injury side, correct?

MR. VALTER VIOLA: Sure. High level. I'm not -- again, my background isn't in insurance, but I understand the nature of the liabilities.

MR. STEVE SCARFONE: Yes. And so would you have any reason to disagree with me that the long-term liabilities out there in 2057 are only injury benefits.

MR. VALTER VIOLA: I can't -- I can't, I'm not an expert in the liability side, I just rely on what has been -- but I understand what the nature of those is, yes. It's not fixing cars.

MR. STEVE SCARFONE: Okay, no. Not fixing a car in 2057 for an accident in 2010.

MR. VALTER VIOLA: Now, it's unfortunate, it's another incident.

MR. STEVE SCARFONE: And so when -- when the matching exercise is undertaken, that particular obligation out there in 2057, could only be met, as I understand it, with the purchase of a bond that is in excess of thirty (30) years. Is that fair?

MR. VALTER VIOLA: Yes, ideally that's the perfect hedge, but you never get that, right. Tough to do.

MR. STEVE SCARFONE: And -- and so as we move along back towards today, you would need mid-

term bonds and short-term bonds to cover those other obligations. Is that fair?

MR. VALTER VIOLA: You need a portfolio of bonds and whether it's the principal amount or the coupon to match whatever you're trying to match in the case of the liabilities.

So it's a portfolio of bonds, they get cash flows from two (2) sources, the redemption of the principal, plus the coupons, yes.

MR. STEVE SCARFONE: Plus the coupons. And so a real return bond, if held to maturity, wouldn't necessarily address the liabilities in the first ten (10) years, is that -- is that true?

MR. VALTER VIOLA: Well, you're just -- you're differentiating between a real and a nominal bond. Could you not make the same argument about nominal bonds?

MR. STEVE SCARFONE: You could, but -- but the real return bond --

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: -- if held to maturity, because as I understand --

MR. VALTER VIOLA: Fourteen (14) of them so.

MR. STEVE SCARFONE: Right.

MR. VALTER VIOLA: Some of them mature sooner, the furthest one out matures in thirty (30) years.

MR. STEVE SCARFONE: Thirty (30) years and --

MR. VALTER VIOLA: The average is twenty-five (25) years.

MR. STEVE SCARFONE: Twenty-five (25) years.

MR. VALTER VIOLA: And the duration is fifteen (15).

MR. STEVE SCARFONE: And the shortest duration, as I understand it, is ten (10). Is that correct?

MR. VALTER VIOLA: You may -- I have it on file, I could check, but I don't dispute it.

MR. STEVE SCARFONE: So to the extent that some event occurred that would require MPIC to have available cash flow for something under ten (10) years, the real return bond is of no value to the Corporation, is that --

MR. VALTER VIOLA: I wouldn't say that. Well, first of all, you're assuming 100 percent -- you're assuming the real return bond would hedge 100 percent of the risk, which it wouldn't.

Rephrase your question, sorry, I want to answer it properly.

MR. STEVE SCARFONE: Well, I'm -- I'm looking at the cash flows here.

MR. VALTER VIOLA: Right.

MR. STEVE SCARFONE: And we see that they're heavily weighted to the -- to the present, you agree with that?

MR. VALTER VIOLA: Yes.

MR. STEVE SCARFONE: Yes. And so the purchase of a bond that doesn't mature for thirty-five (35) years of -- is of no real assistance in dealing with most of the liabilities.

MR. VALTER VIOLA: Well, that's not true. You can always sell a bond.

MR. STEVE SCARFONE: And strip it down?

MR. VALTER VIOLA: Well, no, not strip it. Sell it. You could have a hundred -- hundred dollars and if you need twenty (20) to pay some bills, you sell it.

So it doesn't mean you have to buy and hold it forever, you can hedge your risk by having a pool of capital, bonds in this case. And if you need the cash flow you simply turn the portfolio over and

the transaction costs are what they are.

MR. STEVE SCARFONE: It could be a capital loss though, in that situation -- it could be a capital loss of interest --

MR. VALTER VIOLA: It could be a capital gain as well, but it's a transaction costs. Transaction costs today are -- are insignificant. I mean, they're not insignificant, but you don't want to turn it over every day.

And this is not to say that you -- I'll --

MR. STEVE SCARFONE: Leave it at that.

MR. VALTER VIOLA: I'm trying to avoid the extreme of going from no hedging to 100 percent hedging. There's always something in-between. So I'm being careful about how -- any conclusions that are drawn from extreme scenarios of fully hedging or not hedging with different kinds of instruments and sometimes there's a balance.

I think I alluded to that in the duration policy issue, I said that, you know, the duration policy issue is that you're matching nominal -- using nominal assets to hedge real liabilities and there may be a simple approach that is duration-based, not cash flow matched, that uses real return bonds on

the asset side to hedge those really bad outcomes unfortunate that aren't fixing cars in 20-whatever, and that probably have inflation risk and maybe using the other nominal bonds that aren't as good a goalie to manage some of the shorter horizon ones that have maturities of one (1) year where the predictability is low, volatility is low and inflation and nominal bonds are fine. You don't need real return bonds for next year, you need them for beyond ten (10).

MR. STEVE SCARFONE: Just give me one (1) moment, Mr. Chair, and Mr. Viola, thank you for your patience.

(BRIEF PAUSE)

MR. STEVE SCARFONE: Mr. Viola, thank you. Those are my questions for cross-examination.

MR. VALTER VIOLA: Thank you. You're welcome.

THE CHAIRPERSON: Thank you. I've just spoken to counsel for the Board and their cross-examination's going to take longer than a half an hour.

So we're going to adjourn until 9:00 a.m. tomorrow morning, where we will conclude their --

we will conclude cross-examination, if CAC has further questions and re-examination, then we're going to move into the CSI, and then we'll move into closing argument tomorrow.

So we'll adjourn until nine o'clock tomorrow morning. Thank you.

--- Upon adjourning at 4:07 p.m.

Certified Correct,

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Cheryl Lavigne, Ms.